THE IMPACT OF ENVIRONMENTAL MANAGEMENT PRACTICES ON THE HOTEL FINANCE PERFORMANCE: A CASE STUDY OF WATER MANAGEMENT

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The Impact of Environmental Management Practices on the Hotel Finance Performance: A Case Study of Water Management on Hotel Operating Costs

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ABSTRACT

It appears that environmental issues are becoming a source of competitiveness and that many leading Organisations are realizing the bottom line benefits of implementing environmental management practices (EMPs). Consequently, environment management (EM) is regarded as a component of improving business performance, and implementing EMPs can often provide an opportunity to improve business performance in the hotel industry. However, little evidence shows how to measure and monitor EMPs to improve environmental performance. Although accounting has received considerable attention in the literature as a potential factor with a positive influence on improving environmental performance, there is little evidence regarding the role of accounting in enhancing environmental performance and the lack of empirical research into this link is a key research gap.

An exploratory approach via case study is taken, in order to investigate insights into how managers control and monitor EMPs to improve environmental performance in hotel Organisations. Triangulation methods are employed to explore relationships between environmental performance and accounting practices through investigating how relevant accounting information and techniques assist in controlling and monitoring EMPs. The study uses data triangulation, in other words the use of more than one method of data collection (documents, archive records, and semi-structured interviews), to ensure the reliability of results.

The findings show that traditional accounting systems offer little in the way of opportunity for facilitating EMPs and improving business performance. This study suggests that the monitoring and measurement of practices could assist managers to continuously improve environmental performance. Most importantly, benchmarking and promoting environmental improvement efforts need to be in alignment with the Organisation's longer-term environmental objectives and business strategy. Moreover, the lack of any accounting technique to quantify the relationship between environmental and financial performance has hindered the ability of management to gain more detailed information with a view to improving

business performance. Further to this, without knowledgeable employees, the adoption of environmental management systems (EMS) and monitoring of environmental performance could be expensive and also difficult to sustain in the longer term. Therefore, it is important to seek ways to monitor EMPs and improve business performance. In this study, a framework for monitoring EMPs and benchmarking environmental performance is developed in order to provide detailed information not only for accountants but also for engineers.

It is concluded that there is no crucial link between environmental information and accounting systems and this study suggests that Organisations should enforce the interrelation between EMPs and accounting to increase business accountability. Although this study cannot serve as the definitive account of the link between environmental performance and financial performance and may not be generalizable to the hotel industry as a whole - it still represents a useful contribution to the literature because of the practical and theoretical issues it raises regarding the effective implementation of EMPs in specific Organisations, leading from the analysis of one hotel case study to the likely reverberation of such implementation upon Organisational activities.

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Completing a thesis is an enormous undertaking. While the final report reflects the work of one individual, it cannot be completed without the help, input, and encouragement of others. The present case is no exception. Many people and Organisations contributed greatly to this work. To each of them, I owe my sincere gratitude and appreciation for their assistance, inspiration, and belief in me.

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LIST OF ABBREVIATIONS

AA 1000:	AccountAbility 1000
ABI:	Association of British Insurer
ABLCA:	Activity-Based Life Cycle Analysis
ACBE:	Advisory Committee on Business and the Environment
CAST:	Caribbean Association for Sustainable Tourism
DEFRA:	Department for Environment, Food and Rural Affairs
ECA:	Enhanced Capital Allowances
EC:	European Commission
ED	Environmental Director
EM:	Environmental Management
EMS:	Environmental Management System
EMP:	Environmental Management Practice
EMAS:	European Community's Eco-Management and Audit Scheme
EMAS:	European Union's Eco-Management and Audit Scheme
EU:	European Union
EPA:	Environmental Protection Agency
FC	Financial Controller
GM	General Manager
LCA:	Life-Cycle Analysis
LCC:	Life Cycle Costing
LCECA:	Life Cycle Environmental Cost Analysis
HCIMA:	Hotel and Catering International Management Associations
IH	Institute of Hospitality (formally HCIMA)

IHEI:	International Hotels and Environmental Initiatives
IHRA:	International Hotel and Restaurant Association
IHA:	International Hotel Association
ISO:	International Standards Organisations
PB:	Payback Period
NPV:	Net Present Value
SD:	Sustainable Development
SRI:	Socially Responsible Investments
GRI:	Global Reporting Initiative
SA8000:	Social Accountability 8000
TBL:	Triple Bottom Line
TCA:	Total Cost Assessment
TQM:	Total Quality Management
TCA:	Total Cost Assessment
TQEM:	Total Quality Environmental Management
ROI:	Return of Investment
UNEP:	United Nations Environmental Program
USALI:	Uniform System of Accounts for the Lodging Industry
WRI:	World Resources Institute
WCED:	World Commission on Environment and Development

Chapter One Introduction

This chapter provides a background for the study by introducing the role of environmental management (EM) in influencing business performance and how EM has emerged as an important component of improving business performance over the past decades. This is then put into perspective, giving the rationale for the study to obtain in-depth information about how Organisations control and monitor environmental management practices (EMPs) to improve environmental performance. The scope and focus of the study are then justified, in order to give reasons for choosing the hotel sector as the study target and to formulate research questions. Accordingly, the research aim and objectives are defined to guide the direction of the investigation. The chapter ends with a report summary in order to identify the purpose of each chapter.

1.1 Background of the present study

Over the past two decades, EM has gradually developed into a more mature topic but not all Organisations approach EM in the same way. Some organisations regard EM as an opportunity and incorporate environmental considerations into their activities to improve business performance (see Dahlmann, 2008; Zhu et al., 2007; Kassaye, 2001; Hart, 1997, Schmidheiny, 1992). The perception of EM is reflected in the way that some leading Organisations have come to terms with improvement of environmental performance (e.g. Du Pont, 3M, AT & T). However, a recent study conducted by Yu et al., (2009) did not find a positive relationship between environmental performance and financial performance in a sample comprising 51 European companies from 14 industries across 15 countries. Moreover, a number of authors indicated that environmental issues have been merely irritations, and some Organisations consider EM as a cost instead of a benefit (e.g. Lindell and Karagozoglu, 2001; Catasus et al., 1997). This raises the question of whether organisations perceive environmental initiatives as a challenge leading to improved business performance and, eventually, increased competitiveness, or whether they regard them as yet another burden impeding improvement of business performance. Consequently, the motivations for

Organisations to implement EMPs may be varied and they can be categorized into two groups. The first group are negative and reactive, such as the fear of non-compliance or to avoid bad publicity. It is evident (Amran and Devis, 2008; Lozano and Valles, 2007; Rothenberg, 2007; Rintanen, 2005; and Tzschentke et al., 2004) that governmental regulation is the main driver of managerial environmental actions. Likewise, Bansal (2005) pointed out that the development of an Organisational requirement to manage environmental issues is largely in response to increasing levels of governmental regulations.

Public awareness of environmental problems has its origins in the 1960s, and the 1990s became characterized as the decade of the environment (Rezaee et al., 1995). Recently, Branco et al. (2008) pointed out that public concern about the impact of business operations on the natural environment has become extensive and the potential for detrimental environmental impacts resulting from business activities has become the focus of public and media attention. Moreover, Gelissen (2007) noted that the community wants to live in an environment which is protected and Robbins (2001) pointed out that the current crisis in business and society has recently burgeoned into a socio-environmental issue as community and customer expectations of environmental performance have raised dramatically. Thus, as Poksinska et al. (2003) indicated, showing care for the environment and establishing a strong environmental image can help Organisations to attract potential customers. This is reinforced by various authors (Branco et al. 2008; Lockett et al., 2006; Berry, 2004; Poksinska et al., 2003; Theyel, 2000; Buchholz, 1998; Hart, 1997; Sarkis, 1995; Shen, 1995) who argued that understanding public change allows Organisations to incorporate environmental business in order to explore opportunities to generate profit by responding to this emerging socio-environmental issue.

The second group of motivations are positive and proactive, such as exploring new market opportunities and cost saving. It may appear that consumer demand is the complement to governmental pressure in the pursuit of improved environmental performance by business, and as Bjorner et al. (2004) and Fuchs and Lorek (2005) have indicated, satisfying customer demand for environmentally friendly products is the major motivation for businesses to adopt EMPs and

improve environmental performance. For example, a number of authors pointed out that consumers indicated preferences for products with certain environmentally friendly features which influenced purchasing decisions (Manaktola and Jauhari, 2007; D'souza et al., 2006 and Sloan et al., 2004). In the tourism industry, the English Tourism Council (2002) noted that, "84% of consumers say they would choose an attraction or accommodation provider that was part of a green accreditation scheme over one that was not, if such a scheme existed". Likewise, Iwanowski and Rushmore's research (1994) in the USA showed that 43 million "green tourists" are prepared to pay up to 8.5% more for trips in which the environment is respected. More recently, the pattern has been confirmed by tourist accommodation providers, such as the 3 Rivers Eco-lodge, Dominica (2005, published in Green Globe 21), which found that 76% of potential customers inquiring about accommodation had been influenced in their choice by the lodge's participation in an internationally recognised green accreditation scheme. Moreover, several surveys conducted by Novotel, Hotel Ibis, and Homebush Bay (2002), and Scandic Hotels (1998), revealed a similar result: the majority of customers prefer to stay in environmentally friendly hotels. Besides, due to high demand, Marriott has doubled its number of "green rooms" (Marriott, 2002). However, no evidence shows that consumers' environmental concerns are manifested in their purchasing behaviour and consumer claims stating willingness to pay more for environmentally friendly products have not been matched by their actions.

Without a potential impact on the bottom line changes are unlikely to occur and Kassaye's survey (2001) discovered that the main purpose of large organisations engaging in EM is to achieve financial goals through the reduction of operating costs. Hence, it is believed that Organisations will not change their daily business practices except when there are some pressures or benefits. Pun (2006) argued that, competing in a dynamic marketplace, business success depends significantly upon meeting the changing needs of stakeholders. Since the 1990s, several authors (Hart, 1997; Porter and van der Linde, 1995; Schmidheiny, 1992) have noticed that environmental pressure from stakeholders may have the greatest beneficial effects on improving environmental performance. For many Organisations, the issue of reducing costs provided a wake-up call to adopt EMPs

in the early 1990s (Schmidheiny, 1992) and this was perhaps the starting point for regulatory, societal, technical, and scientific debates about these environmental issues. Initially, businesses activities tended to be defensive, such as organizing compliance when new legislation was on the way. It became clear that EMPs could be offensive rather than defensive because there are potential business opportunities for both cost saving and enhancing sales. Direct links could be made between saving on resources (e.g. water or energy) and price reduction, while good environmental performance could be one way to enhance profit.

Further to this, the diffusion of environmental related techniques via the supply chain is an important factor influencing the improvement of environmental performance. Klassen and Vachon (2003) found that the involvement of suppliers is an influential factor in the implementation and development of environmentally sound technologies. Recently, Simpson et al.'s (2007) study revealed that as the level of investment in environmentally sound technologies increased, suppliers become more responsive to helping their customers improve environmental performance. In addition, various authors (e.g. Gonzalez et al., 2008; Simpson et al., 2007; Canning and Hanmer-Lloyd, 2007; Rao and Holt, 2005; Simpson and Power, 2005; Dyer and Chu, 2003; Handfield and Bechtel, 2002) believed that cooperation between suppliers and customers leads to positive performance gains for both sides involved in the exchange. However, Leed (2008) argued that little research has been conducted on the issue of what motivates suppliers to assist their customers to improve environmental performance.

In recent years, a number of authors (e.g. Dahlmann et al., 2008; Montabon et al., 2007; Darnall, 2006) have proposed the apparently paradoxical notion that the goals of business and environment might be reconcilable, but a dominant pattern in implementing EMPs has been a lack of willingness to internalize environmental issues (see Mottershead, 2004; and Lindell and Karagozolu, 2001). This issue was to some extent accepted as a problem that should be managed, but only in reaction to outside pressures, notably regulation and public pressure. However, during the mid to late 1980s – from embracing environmental issues without innovating - a shift in the regulatory context and growth of the environmental movement created an incentive for managers to look beyond a narrow and

short-term approach (Elkington, 1996). Organisations changed from being resistant to adapting to external pressures to embracing them and incorporating environmental considerations into their policies in a stricter way (Maxwell, 1996 and Rondinelli and Vastag, 1996). No matter which factor influences environmental performance, environmental pressures and environmental benefits do not act in isolation, but rather work together to motivate businesses to improve environmental performance which in turn contributes to the bottom line.

However, there are complicated networks of relationships between EMPs and financial performance and the conflict between bottom line and the adoption of EMPs has been debated over the last two decades. The idea of Porter's win-win concept, which states that systematic improvements in environmental performance will lead to improvements in the bottom line, is an over-simplification and initial enthusiasm about cost saving and competitive advantage has recently given way to a more cautious approach. For example, Bennett and James (1998) found inadequacies in reporting business environmental performance manifested in unreliability of data and lack of comparability. Therefore some authors (e.g. Ackerman et al., 2004; Wilco et al., 2001; Letmathe and Doost, 2000) have suggested that identifying and tracking environmental performance could assist Organisations in obtaining correct and accurate calculations as to improvement in environmental performance. However, there is a wide variety of criteria that can be used to evaluate an Organisation's environmental performance and identifying environmental performance indicators in Organisations is difficult, so that a more standardized system needs to be developed (Bennett and James, 1998); this view is confirmed by Gray and Bebbington (2001). Thus, as James (1994) indicated, each Organisation has to select appropriate measurement or tracking systems because environmental performance information increases its value when it is compared with other standards.

Although Lozano and Valle (2007) indicate that a certified EMS can assist Organisations in controlling EMPs and improving environmental performance, some authors have argued (e.g. Darnall, 2006; D'Souza, 2004; Yakhou and Dorweiler, 2004) that improvement opportunities could vary based on the environmental management standards used or the environmental management

techniques applied. Most importantly, business responses to environmental issues are likely to vary across different Organisations, industries, and sectors. With this in mind, this research has chosen the hotel sector as the target under study, to illuminate what is happening in relation to environmental issues and what concrete steps should be taken? What is the network of relationships between hotel financial performance and EMPs? How can monitoring results of environmental performance be incorporated into evaluation processes, so that demonstrable success can be an inspiration for further action and replication?

1.2 Research rationale

The development of EM in the hotel industry has not really been recognized and supported over the last two decades. For example, Wilco et al. (2001) noted that the first survey of "green reports" from 100 worldwide Organisations undertaken by the United Nations (United Nation Environmental Program Industry and Environmental Office, 1994) did not identify any hotel organisation. In general, the hotel sector does not take a proactive approach toward environmental issues (Brown, 1996) and only focuses on areas where there is legislative requirement and where there are direct financial gains (Kirk, 1995). This is supported by Khatri (1996) who argued that awareness of environmental issues in the hotel industry is still low and environmental efforts are often pushed aside by the pressures of short-term problems. Moreover, as Stipanuk (1996) indicated, there has been little reference to historical efforts by the hotel industry to improve its operations from an environmental perspective. Consequently, the focus of environmental impact research has been almost exclusively on manufacturing industries, and environmental research specific to service industries has been neglected, despite the fact that some service businesses have an impact on the natural environment.

Kasim et al. (2008) indicated that the hotel industry received much criticism because the nature of hotel operations is intrinsically wasteful and environmental issues are directly linked to hotel operating costs, so that effective EM could reduce these costs (Bohdanwics et al. 2006; Wade, 1998; Iwanowski and Rushmore, 1994). However, Stipanuk (1996) argues that the hotel industry has

been slow to take positive action on the environment and that there was not much interest in EM in the hotel industry until the development of the International Hotels and Environmental Initiatives (IHEI). According to Balkau's recent study (2000), EM has increasingly become regarded as part of many Organisations' development agendas, not just as an environmental item, and this has far-reaching implications for the way the hotel industry sector will evolve. Although the International Society of Hospitality Consultants (Glenn, 2006) annual conference did not discuss environmental related issues, the hotel industry should not be forgotten because, as Holjevac (2003) noted, caring about the environment will be hotels' main concern in the future.

Most importantly, many authors believe that operating in an environmentally friendly manner provides another opportunity for hotel Organisations to reduce costs (Holjevac, 2003; Enz and Siguaw, 1999; Kirk, 1996; Brown, 1996; Gustin and Weaver, 1996; Iwanowski and Rushmore, 1994; Elkington et al., 1992). Moreover, a number of studies, by IHEI (2001, 2002, 2003), formal Hotel and Catering International Management Associations (HCIMA, 2002, 2003), and International Hotel and Restaurant Association and United Nations Environmental Program (IHRA & UNEP, 2001), noted that cost savings could be made by controlling and monitoring EMPs. In addition, costs of water supply and water treatment solutions have been increased (The Department for Environment Food & Rural Affairs, 2005; and the Water Regulation Advisory Scheme, 1999). Therefore, hotel Organisations could create positive brand awareness by managing environmental issues (e.g. water resource; see examples of Accor, 2008; Razidor, 2008; and Hilton, 2008). Hence, it is believed that public concern about environmental issues forces hotel Organisations to understand social change in the context of their business operations and public attitudes may shape hotel Organisations in which environmental policy struggles are debated.

However, hotel organisations do have a number of factors that conflict with EMPs and the perceived contradictions might be to blame for examples of reduction in service quality (Hart, 1997), loss of efficiency (Brown, 1996), high costs of investment and low return on investment (Bernard, 1995). This is reinforced by Penny's recent study (2007) which found that lack of governmental regulation

enforcing environmental management practices, low customer demand and lack of knowledge of implementing environmental management systems are reported as the barriers inhibiting hotel Organisations from effectively managing environmental issues. Although there are contradictions between the introduction of EM and perceived comfort and luxury, Tear's research (1996) showed that most hotel organisations are still willing to integrate environmental issues into their business strategies in order to achieve profit related objectives. There has been some research on the monitoring and measuring of environmental performance, but little research has taken place concerning hotel organisations; and the difficulty of compiling data, and the corrections that have to be made to that data have not encouraged the carrying out of comparative studies of EM as opposed to environmental performance in the hotel industry (Buckley and Araujo, 1997).

Some voluntary environmental associations, such as UNEP Industry and Environment, the International Hotel Association (IHA), and the IHEI, have published an "Environmental Action Pack for Hotels" to help small and medium size hotels, which form the core of the hotel industry worldwide, to control and measure their environmental performance. Moreover, Webster (2000) published a guide for students and managers to implement EM in the hospitality industry and reprinted it in 2004, 2005, and 2006. However, owing to the absence of an adequate monitoring system for EMPs, the process of controlling and monitoring EMPs needs to be examined and critical steps to be identified to help hotel Organisations achieve cost savings.

The nature of this study is to identify what drives hotel organisations that seek to improve their environmental performance and to acquire knowledge of how they control and monitor EMPs, and how committed managers are to seeing that their organisations achieve real and continuous environmental improvement; as well as to discover how to develop reliable, consistent measures of environmental performance. Business decisions can be better made once the financial information has been measured and evaluated. The measurement and evaluation of financial information is known as analysis and interpretation and it is generally considered to be the last phase in the accounting cycle (Koen and Oberholster, 1999). In the analysis of financial information, attention is drawn to the relationship

between certain figures and emphasis is thus placed on the calculation and processing of information. The results of analysis are then interpreted by identifying the reasons for improving business practices. Moreover, Lee (1991) pointed out that the underlying assumption of interpretivism or an interpretivist approach is that the whole needs to be examined in order to understand a phenomenon from the participants' point of view, that is, the point of view of those directly involved with the phenomena under study. Hence, it is expected that the interpretivist perspective will allow the researcher to understand a social explanation of accounting in practice and this type of perspective may prove useful in analyzing the way management accounting is used to control and modify Organisational attitude toward EMPs.

Therefore the principle research question was developed: how does a hotel Organisation control and monitor EMPs to reduce costs in a competitive profit-oriented business environment? Three sub-research questions were also developed in order to investigate a hotel organisation step by step, as illustrated in table 1.1. Consequently, effective ways and critical steps can be determined by which hotel organisations control and monitor EMPs, contributing to the bottom line.

Table 1.1: The principal question and sub-research questions

Principle research question	How does a hotel organisation control and monitor EMPs to manage costs in a competitive profit-oriented business environment?
Sub-research questions	Sub. Q 1: Why and how does a hotel organisation respond to environmental issues and implement EM? Sub. Q 2: What and how does a hotel organisation plan to do to improve environmental performance and thereby contribute to the bottom line? Sub. Q 3: How does a hotel organisation monitor and measure performance indicators in order to improve environmental performance?

1.3 Research aim and objectives

In order to answer these questions in table 1.1, the aim of this research is to examine the process of controlling and monitoring environmental performance as it is related to the bottom line in a hotel Organisation.

In order to achieve this aim, four objectives were established:

- To review the theories and practices of EM in hotel organisations with particular reference to the financial aspect (literature review);

- To assess how the hotel Organisation integrates EM into daily operational business management (documents and interviews);

- To examine how the hotel Organisation measures environmental performance indicators in order to identify opportunities to improve environmental performance (archival records);

- To identify critical steps in controlling and monitoring practices of EM for hotel organisations (comparison of secondary literature and primary data).

1.4 Structure of the thesis

This thesis is structured into eight chapters.

Chapter one: Introduction to this study

The introductory chapter provides explanations and justifications for this research on EM and its relation to financial aspects, in order to set out a background context to the study. After this explanation, the process by which the idea turned into research questions, and the research aim and objectives that guide the study are defined.

Chapter two: Literature review

The purpose of reviewing extant literature is to create awareness and understanding of EM in relation to financial aspects in research preceding the current study. A number of case studies and various items of anecdotal evidence are employed to show how organisations have improved environmental performance by controlling and measuring EMPs. It is expected that the existing bodies of knowledge will help to shed light on the problem of controlling EMPs, giving valuable insights into how improvement of environmental performance might be achieved and what some of the limitations might be.

Chapter three: Research methodology

The methodology chapter then puts forward the research philosophy and the methods applied in order to investigate the issues underpinning this research. It is expected that reliable and valid data can be collected to meet the research aim and objectives.

Chapter four: Findings from documents

Chapter four deals with the analysis of documents: both general company documents and environmentally related documents are investigated in order to see how the company plans to implement EM and control EMPs. All findings are singled out so as to be able to present relevant findings before going on to analyse them and discover what implications they might have for environmental issues in the research. The main findings regarding documents are presented to sketch an

overall picture, which is useful for examining financial figures and interviewing managers and accountants.

Chapter five: Findings of semi-structured interviews

Following this, chapter five presents the key findings from qualitative research undertaken to examine the key activities and dimensions applied in mid-range UK hotel groups. The main findings were collected through semi-structured interviews with an environmental director at head office level, a regional environmental director and financial controller, and hotel general managers and accountants about how to approach environmental issues and how to control and measure EMPs.

Chapter six: Findings from archival records

In chapter six, an in-depth investigation of the water bills in the chosen hotel properties is conducted and compared with archival records used for the development of performance indicators, in order to assess whether the true cost has been identified or whether there are other significant elements affecting cost cutting through the reduction of water usage. In addition, this study attempts to use existing water benchmarks and accounting techniques to analyze how efficient the participating hotel group is in terms of water used. Most managers make decisions and act in the present, usually guided by their experience and information available to them about the past, and, as the future is uncertain, this chapter aims to explore the effectiveness of employing relevant benchmarks and accounting techniques.

Chapter seven: Discussion of main findings of this study

The objective of this chapter is to bring secondary data and primary data together in order to acknowledge the differences from and similarities with previous research. It scrutinises the findings outlined in the findings chapters, in terms of what they might mean. Then they are discussed and analyzed with reference to the theories and ideas, issues and problems noted earlier in the report as providing the context in which the research was conceived.

Chapter eight: Conclusions of this study

The conclusion chapter, lastly, draws together the threads of the research to arrive at a general conclusion, and gives a retrospective evaluation of the research and its contribution to current knowledge, which may help the hotel business to improve environmental performance, in turn contributing to the bottom line. New directions identified for further research are also suggested, and several limitations and learning outcomes are noted in order to explain the difficulties involved in carrying out this research.

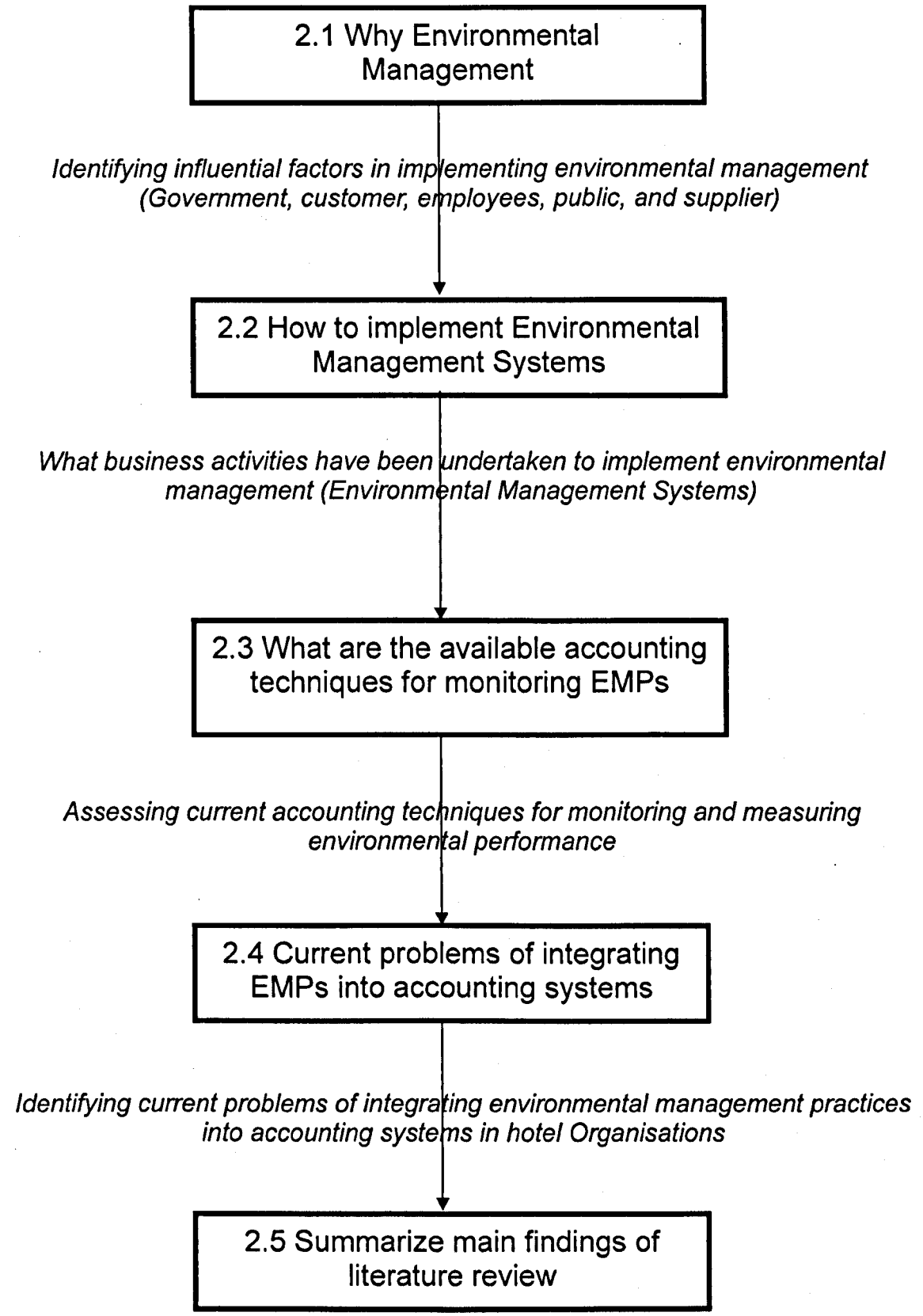
Chapter Two Literature Review

The purpose of this chapter is to evaluate the extant literature, which combines the academic theories and practices of environmental management (EM) and accounting, in order to form a critical review of the influences of EM on business performance. Research questions are used to review existing literature. The "why" question is utilized to understand the influence of EM on business' bottom line and EM concepts in relation to financial performance. The "how" question is employed to evaluate how businesses implement environmental management systems (EMSs) and identify critical factors achieving business objectives. The "what" question completes the picture by seeking to understand what available accounting techniques can be utilized to monitor and improve environmental performance. Particular attention will be paid to the integration of environmental issues into the traditional accounting system in order to acquire specific information on the linkage between environmental management practices (EMPs) and accounting systems. Finally, a number of prominent findings of the relevant literature are highlighted in order to assist in the collection of meaningful primary data.

2.1 Concepts of EM improving business performance

Dincer and Dincer (2006) commented that the real concern of business is to generate better profits, and this concern forces many Organisations to look for opportunities to improve business performance. Moreover, many authors (e.g. Dahlmann et al., 2008; Gonzalez-Torre and Perez-Bustamante, 2006; Kassaye, 2001; Hart, 1997; Maxwell 1996; Schmidheiny, 1992; Smart, 1992a) have claimed that an Organisation's adoption of EM plays a significant role in improving overall business performance. The development of EM progresses according to changes in the business environment.

Figure 2.1: Structure of literature review



During the 1960s, business faced a challenge with the prospect of environmental catastrophe, but failed to achieve anything but a marginal shift in attitudes (Worcester, 1994). In the 1970s, environmental awareness increased among leading Organisations, e.g. Du Pont, and 3M (Gupta, 1994). Throughout the 1980s, environmental pressures came to affect a wider range of industries, such that by now most large Organisations in the developed world are affected. The range of issues included under the environmental umbrella has also become much broader, relating not only to outputs of operations but also relevant throughout operating systems, including inputs and processes (Elkington, 1992). However, since the 1990s, EM has increasingly been presented as a financial benefit delivering opportunities to businesses to enhance their bottom line (Cramer, 1998) and this can be confirmed from KPMG's research (2003).

Some Organisations employ EM to enhance financial performance (Sadgrove, 1992), and Gupta (1994) documented a number of Organisations including Du Pont, 3M, AT & T, Xerox and Procter & Gamble who have integrated EM into their business management successfully. Moreover, Bohdanowicz's (2005) survey of 610 hotel Organisations suggested that an opportunity of saving costs is the main reason encouraging hotel Organisations to implement EMPs. There is, thus, a strong link between EM and bottom line with a significant emphasis on cost reduction. To extend this view, Dahlmann et al.'s (2008) study revealed that the majority of Organisations are making efforts to reduce their costs by achieving business objectives. Consequently, a common theme in the EM literature is the improvement of the bottom line (Makrinou et al., 2008; Lansiluoto and Jorvenpaa 2008; Montabon et al., 2007; Darnall 2006; Melnyk et al., 2003; Porter and vin der Linde, 1995). Two of the most prominent theories that express this relationship between EM and profitability are Porter's win-win concept (1995) which is focused on the cost savings from compliance; and Elkington's win-win-win concept, which proposes benefits not only to Organisations but also the environment and customers (Von Kutzschenback and Brow, 2006; Raar, 2002; Elkington, 1998; Lyon and Maxwell, 1999; Elkington, 1994; Post and Altman, 1994). Further, sustainable development is becoming popular in assisting Organisations to improve the bottom line by innovating in their operational processes (Madu, 2007 and Dobbelsteen et al., 2007) and therefore it is important to discuss how this

affects business bottom line.

2.1.1 Porter's win-win concept

In the early 1990s, Porter (1995) suggested that a high standard of environmental performance was a possible source of achieving superior financial results. Almost a decade after Porter took his position, a further view was expressed that Organisations that adopted a proactive approach rather than just followed legislation on environmental issues might harm short-term profit but gain over the long term, with the benefits coming from the ability to foresee legislation and to make provision for planned environmental expenditures. A number of authors (Porter and Van der Linde, 1995; Rondinelli and Vastag, 2000) reinforced Porter's view and stated that Organisations may have been reacting to an increasingly difficult regulatory environment or responding to market pressure; either way, Organisations' responses to environmental pressures have led to practices that impact on profitability. This common wisdom of the win-win concept of EM has emerged, promising the ultimate reconciliation of environmental and financial concerns. However, integrating EM into business practices would be unlikely to occur without a potential impact on the bottom line and consequently the win-win concept has been criticized from several aspects.

- **Debate about EM based on regulation aspect**

Various authors (Lindell and Karagozoglu, 2001; Tilley, 1999; Colby et al., 1995) noted that environmental issues are often given a low priority by businesses as they may be forced by legislation to make unanticipated expenditures which might be regarded as a threat to their profitability and survival. This supports Fuchs and Lorek's (2005) view about the frequent argument that the influence of EMPs in improving environmental performance suffers from neglecting traditional explanations of economic growth with respect to the impact of environmental regulations. This is reinforced by Connelly and Smith (2003) who referred to EM as "green capitalism"

me=Published/EmeraldFullTextArticle/Articles/1130240304.html - idb12#idb12and criticized it for supporting liberal market economies and existing government structures and failing to resolve the fundamental problem of a society driven by "wants" rather than "needs" (Mottershead, 2004). Consequently, Porter's win-win concept has been criticized for only focusing on environmental regulation, which is just one aspect of EM, and not on how an Organisation seeks benefits through EM. Similarly, Porter's concept of EM is seen to be compulsory due to regulation, rather than being voluntary, so rigorous financial analysis may not be completed (Epstein, 1996). This has led to the win-win arguments for improved environmental performance being subject to greater scrutiny than has been the case for a number of years (Sullivan, 2006).

It is evident that governmental attitudes could influence environmental performance and Quazi (2001) commented that there are two types of governmental attitude addressing environmental issues in business. On the one hand pressure is put on Organisations to place more focus on environmental issues through compulsory environmental audits and stricter legislation (D'Souza et al. 2006; Lyon 2003). For example, Pun (2006) noted that government regulation forced Organisations to emphasize the need to address environmental concerns during product design processes to ensure compliance with environmental policy. Watson (2003) and Wolf and Stanley (2003) argued that it is not enough to rely on enforcement agencies, which may be reluctant to improve business performance. This view is similar to Porter and Vin der Linde's (2000) statement that many Organisations tend to make decisions about innovative EMPs based on how they perceive their competitive situation, and environmental regulation could be an important influence on the discretionary use of innovation to improve both environmental performance and business performance.

On the other hand, another governmental attitude is to use incentives and recognition awards to attract business to become more environmentally sound. For example, the UK government has developed a plan called the Enhanced Capital Allowances (ECA) that encourages businesses to invest in low carbon technology by enabling them to claim 100 percent first year capital allowances on investments in energy saving technology and products. Therefore, businesses

are now able to disregard the whole cost of their investment against their taxable profits for the period during which they make the investment (The Enhanced Capital Allowances Scheme, 2003). This plan supported Uysal et al. (1994) statement that new design technologies present opportunities for businesses not only to manage their natural resources more efficiently but also to reduce environmental impact. As Darnall (2006) pointed out, stronger governmental pressure is more likely to mandate as opposed to merely encourage, and various authors studied how businesses can work together with governments. For example, Okcabol (2007) and Ruiz-Tagle (2008) reviewed the way Organisations and government cope together in order to achieve the desired objectives of both. In addition, Chan and Ho (2006) revealed that two-way communication and sharing experiences in relation to EMPs between governments and Organisations can assist businesses to obtain competitive advantage, as these practices lead to innovative business operations that more than offset the cost of compliance.

In the hotel industry, a number of authors and associations (Burgos-Jimenez et al., 2002; International Hotels and Environmental Initiatives (IHEI, 2007); Hotel and Catering International Management Associations (HCIMA, 2007) pointed out that some environmental regulation could help the hotel business to recognise the cost savings and image benefits that being 'beyond compliance' offers. For example, the UK Environment Agency imposed a £ 50,000 fine on an international hotel chain for pollution in 2000, and a London hotel was fined £ 35,500 and ordered to pay over £14,000 in costs for exposing staff and others to asbestos in pipe lagging in the boiler room (IHEI, 2003). Such fines are extra costs, which reduce profits and IHEI (2003) indicated that some far sighted hotel businesses (e.g. Marriott, Accor) are conscious that regulations do not have necessarily to be a negative restraint on their daily operations and could instead offer opportunities to gain competitive advantage over competitors. Therefore, it is believed that the hotel industry could prepare in advance and avoid expensive remedial measures and also position itself as leading the field in responsible environmental practice and even help to shape new legislation.

The example of the hotel industry reinforces Porter's concept of EM whereby the pre-emption of legislation is likely to be a win–win proposition to assist

Organisations to innovate in business operations, and therefore it is vital to evaluate how investment in environmental related facilities and equipment affect business performance.

- **Debates about EM based on environmental investments**

Palmer et al. (1995) argued "why is regulation actually needed for firms to adopt profit increasing innovation"? Organisations can be profitable only if particular conditions are met, whereby the benefits are larger than the costs incurred. Cramer (1998) pointed out that EM is not a panacea and only introducing the concepts of EM without recognizing the implications of environmental problems for the business process will not obtain financial benefit. This is confirmed by D'Souza et al. (2006) who stated that the basic concern of most business toward environmental impacts is more an attempt to manage their resources effectively and efficiently. Hence, Anon (2007) argued that how to increase awareness of environmental impact to improve business performance is becoming an important management issue. The literature contains considerable debate on the influence of environmental investment on business profitability.

A number of authors (Zhu et al., 2007; Simpson et al., 2007; and Gonzalez-Torre and Perez-Bustamante, 2006; Israeli, 2002; Goosey, 2000; Lyon and Maxwell, 1999; Hart, 1997; Porter and van der Linde, 1995) support Porter's win-win concept of EM whereby integrating EM into business operations could promote innovation and thereby improve business performance. Recently, a number of authors (Montabon et al., 2007; Magrini and Lins, 2007; Rothenberg, 2007; Darnall, 2006; Bansal 2005; Melnyk et al., 2003; and Pan, 2003) have become interested in studying the relationship between environmental management and financial performance with statistical methods. As postulated earlier by Porter's win-win concept of EM, most of these authors confirmed that improving environmental performance can enhance financial benefits through cost saving due to more efficiently used resources.

However, Walley and Whitehead (1994) argued that responding to environmental problems is always a no-win proposition for Organisations, and that environmental related costs are skyrocketing in most Organisations, with little chance of

economic payback. Consequently, the win-win opportunities become insignificant in the face of enormous environmental expenditures that will never generate a positive financial return, and thus decrease competitive advantage. This is reinforced by Catasus et al. (1997) who indicated that the win-win concept ignores the fact that some environmental investments have resulted in negative financial outcomes for businesses. There are signs that some Organisations feel they have reached the point where the costs of further environmental improvements are likely to outweigh the benefits that may accrue. Although Gray (1994) argued that enlightened Organisations are investigating environmental issues, many others are unsure of how to react to all the changes attendant on integrating environmental issues and find that the financial benefits are difficult to obtain. In addition, as Epstein (1996) argued, investment in environmental equipment is not analysed thoroughly; costs are often not fully identified; and benefits are ignored. To extend Epstein's view, Catasus et al. (1997) stated that the win-win concept of EM ignored the fact that some environmental investments have resulted in negative financial outcomes for businesses.

- **Debate over EM based on customer aspects**

Consumer demand is the complement to governmental pressure in the pursuit by business of improved environmental performance, and EU Institution Press Releases (2002) pointed out that EU citizens worry about global environment trends. Moreover, some authors (e.g. Manaktola and Jauhari, 2007; Bigsby and Ozanne, 2002) commented that Organisations should integrate environmental issues into their operational processes and products if customers are willing to pay a price premium. However, Laroche et al. (2001) argued that customers will only pay premium prices when they believe that the benefits outweigh the costs of such purchases. Moreover, Phau and Ong (2007) found that though customers are becoming increasingly "green-minded", they are not necessarily consuming more "green" products, but exercising "better consumption behaviour" toward green products. To reinforce Phau and Ong's finding, Manaktola and Jauhari (2007) studied consumer behaviour in the hotel industry and found that customers would prefer to stay in the hotels that are conscious of environmentally friendly practices

but are not wiling to pay extra for these practices or services.

Furthermore, Pickett-Baker and Ozaki (2008) revealed the influence of marketing on consumer purchasing decisions and Jones et al. (2007) and Ricky et al. (2006) recommended that Organisations could use EM as a marketing tool to communicate with their customers about willingness to improve environmental performance. However, Ricky et al. (2006) argued that Organisations should take into account environmental claims, the degree of environmental consciousness of their target customers, and service type when designing environmental advertisements. As some authors (e.g. Darnall, 2006; Rintanen, 2006; and Bjorner et al.; 2004; Bigsby and Ozanne, 2002) indicated, many customers may demand certified EMS (e.g. ISO 14000) even though some may not understand the exact meaning of the content of the particular environmental standards (D'Souza et al., 2006). Consequently, in situations where customers are concerned about environmental impact but are not fully informed or are unable to measure environmental impact, third party accreditations provide confirmation of environmental standards in practices and products (D'Souza et al., 2006). Nevertheless, Bhaskaran et al. (2006) argued that third party accreditation can derive from a variety of sources and the large numbers of accreditations can confuse consumers.

Increasing environmental problems related to increases in production and consumption has contributed to the development of the concept of EM. However, the number of definitions is large and sometimes conflicting points of view on the influence of EM has inevitably led to a quest for evidence that demonstrates the existence of financial benefits created from implementing EMPs. Recently, Griffith and Bhutto (2008) studied the influence of EM and found that cost driven EMPs could not apply effective management systems to improve environmental performance. Hence, there is a need to look into EMPs from multiple points of view in order for business to measure and manage the impacts caused by operational processes and to attain benefits for government, society, and business (Painter-Morland, 2006; Norman and MacDonald, 2003). This need has led to the formulation of a 'triple bottom line' (TBL) theory to reflect economic, social and environmental performance (Elkington, 1998).

2.1.2 Elkington's win-win-win concept – triple bottom line

To extend Porter's win-win concept, Elkington (1997) realized that EMPs faced new challenges and noticed that environmental performance was not mentioned in the literature before 1995. Therefore Elkington (1998) coined the phrase triple bottom line (TBL) and introduced the "triple-P bottom line" which underlies the win-win-win concept, whereby Organisations have responsibilities to the wider community, not just to their shareholders. Triple P refers to profit (economic prosperity), planet (ecological quality), and people (well-being) and the term TBL was formally introduced into Organisation communication circles in Elkington's (1997) book, with few references to the term before this date. Elkington's main point is to explain to businesses how to integrate economic objectives with environmental and social objectives in their EM in order to achieve sustainability. This is supported by Norman and MacDonald (2003) who stated that an Organisation's ultimate success should be measured not just by the traditional financial bottom line, but also by its social/ethical and environmental performance. In the maelstrom of interrelated competing concepts of EM, the TBL has become arguably established in business circles (Elkington, 2004; Henriques and Richardson, 2004; Painter-Morland, 2006). For example, Organisations such as Shell and Nike have adopted explicit TBL-like strategies in response to community criticism of their behaviour (SustainAbility, 2003); British Telecom, Monsanto and Wal-Mart, and NGOs like AccountAbility, have joined nearly all the big accounting Organisations in reporting on and attempting to use TBL to communicate to various stakeholders (Bishop and Beckett, 2000; Raar, 2002; von Kutzschenback and Brown, 2006). Moreover, Cornell University's Hotel Management Professor Robert Chase pointed out that there is a win-win-win situation for hotel EMPs (Green Hotel Association, 2002).

Feigenbaum (2002) revealed that Elkington's TBL had become a useful framework for measuring and reporting business performance against economic, social and environmental parameters. The group of 100, which is an association of senior accountants and finance executives, has prepared a TBL guide to

communicate their environmental performance with their stakeholders (The business council of Australia, 2003). Moreover, Savitz and Weber (2006) evaluated a number of Organisations, e.g. BP, Toyota, and DuPont, in their book on TBL to explain how and why these Organisations are willing to publish their TBL reports and be judged on the basis of detailed information. However, different users of TBL interpret the concept in a variety of ways and it is rarely clear what most people mean when they use this language or what claims they are making on behalf of applying TBL seriously. As Mowat (2002) indicated, TBL is an ill-structured or poorly defined measure and does not focus on improving or clarifying key measures of Organisational well-being. Various authors extended this problem by arguing that the lack of operational definitions of TBL generates uncertainties that jeopardize problem solving (Doane, 2004; Norman and Macdonald, 2004; and Adams et al., 2004).

Although a number of authors criticized the usefulness of TBL and argued about its imprecision, lack of specificity and operational indices, Wexler (2009) pointed out that the TBL's openness to multiple interpretations enables each Organisation in the emerging network to expect to win concessions from other businesses. It is believed that the TBL is a work in progress attached to the EM concept which requires the compromise of those interested in generating a workable solution, thus assisting business to find opportunities to enhance the bottom line more efficiently.

2.1.3 Sustainable Development (SD)

Environmental management seeks to insert the concept of sustainable development into the processes of production of goods and services, through different mechanisms that are efficient in combining technological processes, economic growth and sustainability (Schaltergger et al., 2006; Sena da Silva and Dumke de Medeiros, 2004). For example, Chad (2001) used DuPont as an example to demonstrate how they can achieve sustainable growth by implementing EMPs. Moreover, Madu (2007) argued that sustainability in implementing EMPs can be accomplished through three main approaches: social

responsibility, environmental protection, and economic progress. The concept of sustainability is not new in the literature but little of it outlines the concept of sustainability in the context of planning and management. However, the increasing importance of sustainable development has been an important stimulus in the development of environmental management systems. The World Commission on Environment and Development (WCED, 1987) reached global consensus on the meaning of sustainable development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". This consensus was based on a four year consultation that included all disciplines of knowledge, and those responsible for organizing and controlling society in the developing and developing worlds (WCED, 1987). The consequence of the consensus was a description of sustainable development that includes scientific terms, ethics, and perceptions of value from all cultures and societies. Therefore, bringing practical solutions to sustainable development problems requires a transdisciplinary knowledge base and a holistic management approach (Klein, 2004).

The concept of sustainable development is nevertheless inherently vague (Daly, 1990) and it remains difficult to express it in concrete, operational terms (Briassoulis, 2001). However, it is generally accepted that the objectives of sustainable development are social equity, economic efficiency, and environmental performance (Labuschagne et al., 2005). This is enforced by Brent and Visser (2005) who indicated that performance objectives manifest three operational focal points that are fundamental to most business processes. Businesses are consequently pressurized to incorporate economic, environmental and social performance in their policies and decision-making processes (Brent et al., 2002). No matter what focuses of sustainable development are emphasized, Dobbelsteen et al. (2007) have noted that there is a need to focus on solutions effectively improving environmental performance in order to achieve sustainable development.

Although many authors provide different concepts of EM, in most cases the focus is on economic and social development, not leading to degradation of natural resources and the environment. It is evident that EM provides opportunities to

improve environmental performance but it depends mainly on business objectives. The EM concept has become increasingly inclusive recently and has remained static since the introduction of integrating environmental issues into management systems; but effectiveness in implementing EM depends on which EM concept is embedded in the overall management of the Organisation and how this is achieved, which includes setting of precise objectives, strategies to pursue, distribution of responsibilities and management of results obtained. A different EM concept may lead to different environmental performance and the results of course will be varied. However, it is not the intention to discuss all concepts in relation to EM but to focus on how to achieve business objectives through the integration of EM. No matter what activities Organisations undertake, there is a need to understand what critical factors affect their environmental performance. Consequently, understanding influential factors in implementing environmental management systems (EMS) could assist Organisations to perform their work so as to proactively avoid or mitigate environmental impacts.

2.2 Critical elements of implementing EMS

Some authors have claimed that an EMS helps businesses to evaluate, manage and improve environmental performance by providing a methodology to integrate EM into business operations in a systematic manner. For example, Zutshi et al. (2008) recognized that EMS enables companies to enhance business performance, through the improvement of environmental performance. In Gonzalez et al.'s study (2008) and Ann et al.'s (2006) study, a positive relationship was found to exist between the possession of a certified EMS and EMPs. Similarly, Tsai et al. (2003) indicated that the EMS brings benefits (e.g. competitive edge and reputation) to hotel Organisations and these benefits have always outweighed the cost. The evidence above indicates that the implementation of an EMS can obtain benefits but Lozano and Valles (2007) argued that the application of an EMS would not automatically lead to improved environmental performance. This informed Vogel's (2005) statement and indicated that some Organisations claimed to adopt superior EMPs without actually improving their performance. This was extended by Lansiluoto and Jorvenpaa (2008) who found that although various

authors have mentioned benefits of implementing an EMS, managers should be aware as to whether these benefits are claimed by commercial providers or have been identified through business experiences of implementing EMS.

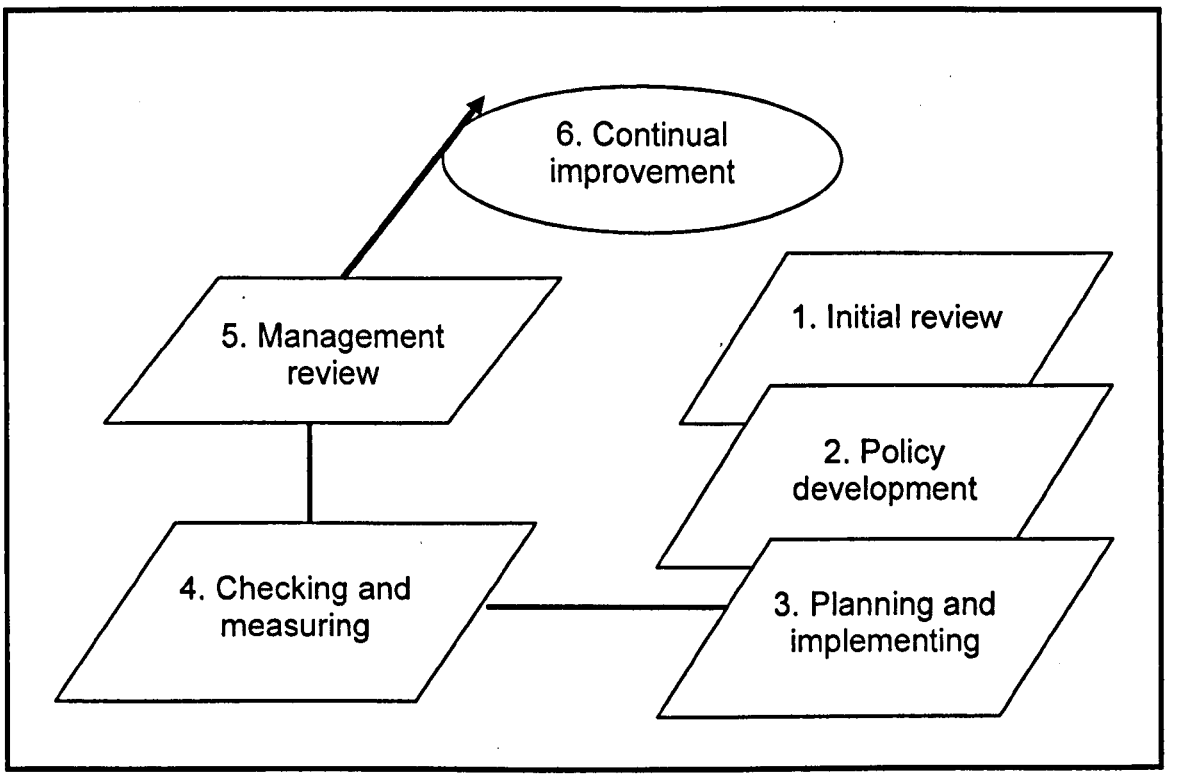
The most cited EMSs include the International Standard ISO 14001 (Watson and Emery, 2004) and the European Community's Eco-Management and Audit Scheme (EMAS). Also, UNEP, IHRA, and EUHOFA (2001) have attempted to develop an EMS based on the EMS specifications of ISO 14001, which uses a number of examples to demonstrate theory in practice. The ISO standard establishes the specifications of an EMS for any type of Organisation, for certification intention or not, and Fortunski (2008) suggested that ISO certification can be considered as an additional control mechanism for improving environmental performance. However, Chau et al. (2000) doubted if the application of voluntary EMSs (e.g. ISO 14000) could really be effective to improve environmental performance. Perez et al. (2007) also argued that although international certified EMSs were developed to improve environmental performance, each EMS is established to encompass very different activities and environmental burdens, depending on the Organisations utilizing it (Perez et al., 2007).

A number of authors (Pun et al., 2002; and Davis, 2000) suggested that various critical elements should be included in an EMS and Bohdanowicz (2005) commented that each of the EMSs should be developed with a different purpose and with different stages in its implementation process. In the hotel industry, various systems have been developed to assist hotel Organisations to implement environmental management programmes. For instance, Pryce's (2001) continuous EMS; Kirk's (1996) input/output system; Wade's (1998) input/output diagram; Middleton and Hawkins's (1998) ten R's; Khatri's (1996) four R's; and the action plan of the International Hotel & Restaurant Association (IH&RA, 1996). However, Pryce (2001) indicated that a report made by Pricewaterhouse showed only 40% of large European hotel Organisations had a formal EMS and only one was externally verified. None of the researchers claimed their suggested system to be the most suitable for the implementation of environmental management programs for the hotel business. Despite the creation of the United Nations

Commissions on Environment Development and an increasing number of organisations being concerned with the environment, it may still be argued that implementation of an EMS remains a key challenge (Zutshi and Sohal, 2005; and Ryan, 2003). As Sena da Silva and Dumke de Medeiros (2004) indicated, there are many methods for managing the environment, but Organisations still show some resistance to EMS adoption. For example, Chan and Ho (2006) explored the fact that most hotel Organisations are unwilling to develop an international EMS probably due to a lack of resources and knowledge. Therefore, this section utilizes Pryce's (2001) continuous EMS to assess which elements influence the implementation of EM programmes and how those critical elements assist managers to control and monitor EMPs (see figure 2.2).

According to Pryce's proposed EMS, six elements are needed in implementing EMPs and continuously improving environmental performance: initial environmental review, environmental policy development, planning and implementation of EMPs, checking and measuring EMPs, management review of EMPs, and continual improvement of EMPs.

Figure 2.2: Elements of a successful environmental management system



Source: Adapted from Pryce, (2001)

2.2.1 Conducting initial environmental review to raise environmental awareness

The four-step process of plan, do, check, and act, which is often cited as the generic framework for initiating and maintaining an EMS (e.g. Lansiluoto and Jorvenpaa (2008) does not include an element of initial environmental review. However, Zutshi and Sohal (2005) indicated that an initial environmental review (or gap analysis) could identify potential improvements and assist managers to realize whether or not they have adequate resources to implement an EMS. This is reinforced by Zutshi and Sohal (2008) who argued that an initial environmental review could be used for systematic and comprehensive identification and documentation of relevant environmental impacts associated directly or indirectly with the Organisation's activities. This confirmed Ushedo and Ehiri's (2006) study which claimed that initial review in environmental matters may emphasize the preservation of the natural environment, and decisions may be reached through cost benefit analysis to improve business performance. Moreover, a recent study conducted by Ruiz-Tagle (2008) found that reviews of environmental impact allowed managers to identify problems and obstacles, helping them to design appropriate strategies to foster environmental improvement.

Few authors mentioned that an EMS should start with an initial environmental review and most existing EMSs seem to start with the development of an appropriate environmental policy and to neglect the importance of an initial review of current business operations related to environmental issues. Similarly, few hotel Organisations have included an initial environmental review in their reports; there is only one example of conducting an initial environmental review (Ben,1999) so that a hotel business could start identifying significant environmental impacts. However, Halkos and Evangelino (2002) reported that there has been no set way to conduct an initial environmental review and thus no set way to report the findings of such a review. No matter what system or procedure Organisations use, they should know that an initial environmental review could assist in identifying the magnitude of the gap in implementing EMPs and elucidating the current practices adopted to minimize this gap, thus improving overall environmental performance.

2.2.2 Developing environmental policy according to business strategy

Faulkner et al. (2005) commented that business should change attitudes toward environmental policy. Developing an environmental policy for improving environmental performance was a matter of central attention in improving environmental performance in the 1990s. There is ambiguity since the comprehensiveness of environmental policies varies widely from vague to more specific goals and environmental policies may change from year to year. For example, Welford (1993) suggested that the starting point must be to make a clear statement of environmental policy because an environmental policy is a critical component of an EMS and typically details the Organisation's recognition of environmental impacts and states commitment to continuous environmental improvement. Moreover, a number of authors revealed that the development of environmental policy always links to business strategy because a number of pressures such as legislation and public concern, as well as market opportunities arising from environmental concerns, have compelled Organisations to integrate environmental issues into their strategic planning processes (Fergusson and Langford, 2006; Khanna and Anton, 2005; Banerjee, 1998; Ghobadian et al., 1998; Maxwell et al., 1996). It is critical to integrate environmental considerations into business strategy, and, since an Organisation faces a challenging number of strategic options when faced with environmental issues, managers need to decide how environmental concerns should be integrated into business strategy (Tsai and Child, 1997).

However, integration of environmental issues may occur at different levels of strategy depending on managerial perceptions of their importance. Various authors (e.g. Banerjee, 2001; Lesourd and Schilizzi, 2001) agreed that Organisations with proactive business strategies would also have a strong response to environmental pressures. As Epstein and Roy (1997) suggested, environmental policies should be parallel with business strategy, since Fischer and Schot (1993) have indicated that the intensity of environmental pressures varies by country, industry, and Organisation. Therefore, as Schaefer and Harvey

(1998) noted, different business strategies may lead to different EMPs which obtain different benefits. The hotel sector is not taking a proactive approach compared to the oil and chemical industries and this is reinforced by Brown's (1996) study. As Khanna and Anton's (2005) findings indicated, factors motivating Organisations to pursue environmental policy can be reactive or proactive. It is believed that Organisations that are impacted on by environmental pressures more significantly than others need to have a more proactive environmental policy.

Moreover, Dalhmann et al. (2008) argued that despite the growing salience of environmental challenges, many Organisations fail to employ a more proactive environmental strategy and they suggested that a lot more could be done at environmental policy level to improve environmental performance overall. However, Cohen-Rosenthal (2003) argued that Organisations tend to develop an overreaching goal of environmental policy to reduce environmental impact and improve environmental performance. This supported Khanna and Anton (2005) finding that there is a gap between development of environmental policies and business strategy; hence, there is a need to investigate gaps between environmental policy formulation and implementation. Consequently, the following section goes on to discuss activities relevant to the planning of environmental management programmes and implementation of EMPs.

2.2.3 Aligning environmental planning with business objectives

Koroljova and Voronova (2007) argued that little can be done to improve natural resource consumption and materials usage beyond the planning and implementation stage. Nevertheless, environmental planning is a complex and continuous process and Pun et al. (2002) noted that the effectiveness of the process relies largely on stable environment and quality planning resources. Thus, Magrini and Lins (2007) recommended that businesses should integrate EM into strategic planning and Koroljova and Voronova (2007) further suggested that managers should apply available international standards (ISO or GRI) to identify proper procedures for various activities with an emphasis on minimizing environmental impact. The European Commission (2006) indicated that the

International Standard Organisation (ISO) 14001 and Eco Management and Audit Scheme (EMAS) have been found to be useful and practical tools in many large Organisations. In addition, Lansiluoto and Jarvenpaa (2008) noticed that the initial purpose of EMS implementation was to obtain an environmental certificate and that it has recently turned into the linking of environmental performance with profitability. For example, Radonjic and Tominc's study (2006) showed some evidence that implementation of ISO 14001 certification had stimulated technological innovation activities, and since some Organisations in the study are technology-intensive, the technological performance of the Organisation's product is probably a key determinant of its market success.

However, Maxwell et al. (1997) argued that many attempts at EMS adoption do not necessarily lead to an enhanced competitive advantage for Organisations and they thus need to align environmental planning activities with business objectives, and identify critical processes and procedures according to the pressures bearing on their unique business characteristics. Although Corbett and Kirsch (2000) noted

thathttp://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=Published/EmeraldFullTextArticle/Articles/0830170106.html - b100#b100 implementation of ISO 14001 standards actually led to environmental improvement and might eventually lead to increased profitability, some Organisations that already have an established EMS see little benefit from aligning their systems with the standard (Balta, 1999). It is likely there are a number of disadvantages and some authors think that there could even be a downside to implementing an EMS, in such factors as added bureaucracy and requirements for extensive, unnecessary documentation. Moreover, Balta commented that the high cost of ISO 14001 standards varying from Organisation to Organisation might actually result in the redirection of resources away from investment in more environmentally friendly processes. Despite a number of studies attempting to study the correlation between environmental and financial performance (e.g. Wanger 2007; Montabon et al., 2007; Darnall, 2006; and Melnyk et al., 2003) findings have been limited in indicating the relationship between environmental and financial performance.

Few studies have been found to investigate the factors influencing planning and

implementation processes and it is important that managers are aware that different planning methodologies may lead to varying planning results and decisions; the current level of business interest in the environment and associated action also varies enormously. Most importantly, relevant management activities in the sense of how to monitor EMPs to improve environmental performance need to be identified and therefore the next section assesses how current Organisations control and monitor their EMPs, which in turn contribute to the bottom line.

2.2.4 Measuring environmental performance to develop accurate performance indicators

Kolk and Mauser (2002) noted that attention in implementing EMS has concerned to performance evaluation and the decision to adopt an EMS must be based on environment performance. As Rowland-Jones et al. (2005) indicated, evaluation of environmental management systems could be regarded as indicators of environmental performance. Moreover, a number of authors pointed out that the continuous improvement of the EMS should be monitored and evaluated in order to verify the conformity between the development of environmental policy and the planned activities. For example, Koroljova and Voronova (2007) and Matthews (2003) commented that preventive measures can be taken to measure environmental performance by observing environmental performance metrics. This reinforced Burgos-Jimenez et al.'s (2002) finding that the evaluation of environmental performance would provide better information to managers who could use it to improve business performance.

Similarly, Jimenez and Lorente (2001) considered environmental performance as an operations objective and Haktanir (2006) and Jarrar (2004) explained that measuring environmental performance would express the degree to which objectives have been achieved and assist Organisations to improve business performance. For example, The Razidor hotel group (2009) announced a significant reduction in costs through checking and measuring environmental indicators, e.g. energy indicator, water indicator. As a result, Catherine (2008) claimed that performance measurement is considered to have an important role in effective planning and efficient running of EM. Similarly, the focus of Hilton hotel

group's environmental management programmes is to control and measure EMPs in order to provide realistic figures which the hotel group can publish as results of environmental performance (Hilton Hospitality Inc., 2009). As expected, performance measurement is vital to the Hilton hotel group, which aspires to achieve superior levels of effectiveness and competitiveness, and also represents the yardstick which tells managers how well they have done and as such motivates them to achieve higher targets.

Although performance measurement is a critical part of improving business performance there are many limitations making it less applicable in today's competitive market. Some authors found that the majority of hotel Organisations still use traditional financial measures (e.g. profitability measures) for performance evaluation (e.g. DeFranco, 2007 and Atkinson and Brander, 2001). Moreover, Hervani et al. (2005) argued that performance measurement systems are typically internal business focused, and Ghalayini and Noble (1996) claimed that they are based on outdated traditional cost management systems, lagging metrics, not related to corporate strategy and inflexible continuous improvement. As DeFranco (2007) indicated, financial performance measurement used alone is weak because a total dependence on financial performance measurement has disastrous results in directing managers to use monetary feedback in isolation to control a wide range of activities. Consequently, the focus of performance measurement has recently shifted from quantifying accounting figures to evaluating business processes. To extend this view, Pratt (2005) pointed out that evaluating business processes is much better than quantifying financial performance, as it encompasses qualitative as well as quantitative measures. However, Kennerler and Neely, (2002) noted that the lack of ongoing attention to the performance measurement process is identified as a "barrier" to the "evolution of performance measurement". In particular, performance measures have historically been designed and managed by accounting and finance functions within organisations. Kennerler and Neely later explained that this has caused organisations to manage most of their projects on the basis of outdated cost and finance oriented lagging measurements.

In addition, Sena da Silva and Dumke de Medeiros (2004) commented that the

evaluation of environmental performance depends on performance indicators. Further to this, DeFranco (2005) and Haktanir (2006) pointed out that there are two major areas for benchmarking ratios: operational metrics and financial metrics. However, Hervani et al. (2005) revealed that there is a difficulty in developing standards for performance measurement because a performance measurement system may be unique to each individual Organisation, reflecting its fundamental business purposes and environmental objectives. This confirmed Hanna et al's (2000) argument that the positive relationship between environmental performance and business performance in the literature was not "checked" and "measured" based on numerical figures. According to Hanna et al., this had a detrimental effect on the development and effectiveness of an EMS. Therefore, as DeFranco (2005) indicated, Organisations need to coordinate both quantitative data and qualitative information in order to check and ensure compatibility of data which could help managers to measure environmental performance and develop accurate performance indicators to improve business performance.

2.2.5 Management review and reports of environmental performance

Zutshi and Sohal (2005) commented that simply obtaining certification for implementing EMPs is not sufficient. It is essential for Organisations to undertake management review on a regular basis to examine the environmental performance of business activities in order to illustrate the problems existing in practice and to determine whether any changes or revisions are needed in the Organisational environment policy. However, Liyin and Hong (2006) and Smith et al. (2007) argued that management review should consider the development of EMPs according to business characteristics and relevant stakeholders' responses. This would help managers to update environmental policy to echo innovations and to communicate with stakeholders about environmental performance.

Moreover, Papmehl (2002) indicated that awareness of communicating information on environmental performance has led to a growing number of international accounting standards concerned with reporting environmental

performance being developed for Organisations. For example, the Global Reporting Initiative (GRI) is the most cited framework and an official collaborating centre of the United Nations Environment Program (UNEP) working in cooperation with UN Secretary-General Kofi Annan's Global Compact (GRI, 2002). Moreover, Medley (1997) pointed out growing governmental pressures such as the Organisation Law Review, the amendment to the 1995 Pension Act, the Turnbull report on internal controls, and the recent Association of British Insurers' (ABI) guidelines on socially responsible investments (SRIs). No matter how many international standards are developed for Organisations to report their environmental performance, it is important to give particular attention to the fact that the majority of environmental reports from Organisations are directed towards communication in the categories of Organisation profile, external relations and environmental performance (Kolter et al., 2005; Papmehl, 2002). Moreover, a number of authors (Chatterjee and Mir, 2008; Branco et al., 2008; Raar, 2007; Al-Tuwaijiri, 2004; and Campbell, 2004; Kolk, 2000) noted that environmental reporting underwent a remarkable growth from the 1980s to the 1990s and Organisations have become actively engaged in reporting of environmental related financial data to enable themselves to distinguish their positions in the competitive market. Several surveys support this statement: according to the Advisory Committee on Business and the Environment (ACBE. 2001), Organisations taking up environmental reporting in the USA appear to have achieved a substantially higher level of public attention than has been the case in the UK. For example, in the early 1980s, only 5 to 9% of UK sample Organisations did some kind of environmental reporting, whereas over 50% of US sample Organisations already did so (Gray et al. 1998). Although the UK government is applying further pressure on Organisations to improve and report on their environmental, ethical, and social policy, many FTSE 250 Organisations are currently not reporting (Watson and Emery, 2003) and environmental reporting in the UK is still a voluntary activity (Howes, 2004).

Some authors (Matthews, 2003; Ottman, 1998) have pointed out that it is critical that the reporting and communicating of business environmental performance should continually evolve as a consequence of providing a wide range of both qualitative and quantitative information to a range of stakeholders in order to

improve environmental performance. In other words, environmental reporting could be a marketing tool to communicate with stakeholders about successful environmental related practices and could assist Organisations to actively engage in reporting environmental related financial data to enable themselves to distinguish between proactive and less active performers (Grafte-Buckens and Hinton, 1998). Moreover, Hooper and Greenwall (2005) indicated that many environmental reporting activities were driven by the belief that the reputation of Organisations is enhanced by the greater accountability and transparency afforded by the publication of corporate environmental reports. However, Peatie (1999) argued that reporting successful EMPs should be geared not so much towards selling a "particular product" as towards the social values that products represent. This is reinforced by Bouma and Kamp-Roelands (2000) who noted that most Organisations intended to integrate stakeholders' interests merely by focusing on the environmental statement, which may be insufficient for meeting stakeholders' needs, especially concerning the provision of reliable information. Consequently, little assessment of the value of these reports to different stakeholder groups has been undertaken (Hooper and Greenwall, 2005). Additionally, Chatterjee and Mir (2008) explored the issue that most environmental information disclosed in annual reports was narrative in nature without specifically discussing the policy, and did not reflect the contribution of the Organisation toward the improvement of environmental performance. Therefore, Organisations may categorize negative environmental performance into confidential management reports which are not communicated to stakeholders. Hence, in order to reinforce a good image regarding environmental issues, Organisations may choose to publicize a specific part that conforms to environmental standards and improvements.

Some authors (Smith et al., 2007; Ricky et al., 2006; Kuang-Hsun et al., 2006; Adams, 2002) noticed that the environmental sensitivity of the industry will affect Organisations' reporting on environmental performance. For example, in the hotel industry, only international hotel chains have included environmental issues in their annual reports and published them on their websites. As Kolter et al. (2005) indicated, most environmental reports and policies of Organisations are to be found via the internet. Thus, Gallhofer et al. (2006) and Campbell and Becker

(2004) assumed that the internet has become an important and readily accessible means for customers and the general public to obtain company-specific environmental information. Examples of this include Accor group, Bass group, and Razidor group. Accor group (2008) produces an annual environmental report to show that they are good corporate citizens and work to pursue growth and performance objectives in a manner which is both consistent and respectful. Similarly, Razidor group uses environmental reporting as a communication tool internally and externally (2008). The new Radisson SAS Responsible Organisation program takes a three-pronged approach covering environmental, social and economic performance.

In general, the Intercontinental hotel chain is the most cited best EMPs in the published articles (Mensah, 2004; Hospitality Net, 2008; and IHEI, 2006, 2007). Although annual reports have been found for these international hotel chains, most information focuses on building a positive public reputation regarding their concern for the environment. Most importantly, financial performance is not the focus on the environmental reports and it is difficult to acquire information as to how efficient they really are and how much exactly they have saved through the implementation of EMPs. This is confirmed by a number of authors (e.g. Murray et al., 2006 and Al-Tuwaijiri, 2004) who have found a positive relationship between environmental reports and financial performance. However, Chatterjee and Mir (2008); Smith et al. (2007) and Yusoff et al. (2006) revealed that there is no discernible link between environmental reporting and financial benefits. Yusoff et al. explained that reporting environmental performance may be driven by social concerns rather than profit considerations. Therefore, a clear relationship between environmental reporting and financial performance is difficult to identify and measure.

It is evident that international hotel chains (e.g. Razidor and Accor's annual reports) have made efforts to communicate their EMPs with stakeholders. However, Sloan et al.'s (2004) survey found that the communication of new environmental initiatives between hotel Organisations and their stakeholders is not so effective. Moreover, few medium and small size hotel Organisations have been found to report their EMPs. These different attitudes between hotel

Organisations could be explained through Haddock's (2005) study which found that there were multitudes of factors influencing provision of environmental information publicly, e.g. pressure from stakeholders and business strategy. In short, it is expected that environmental reports could provide an overall picture for managers to see environmental performance as a key aspect of their competitive profile. Besides, it is important to understand that numerous efficiencies and improvements are realized through changes to operating procedures; thus the following part discusses a number of activities which have been undertaken to continuously improve environmental performance.

2.2.6 Continual environmental improvement through the reward system

Zutshi and Sohai (2005) revealed that revaluation of environmental goals and environmental performance for continuous improvement is an essential part of most EMSs. An empirical study by Ramus (2001) found that managers' behaviour which encouraged daily praise and environmental rewards was ranked as being among the most important factors for continuous environmental performance improvement. Similarly, Patton and Daley (1998) indicated that rewards could be a reinforcement to continuously motivate and increase commitment from employees to be environmentally responsible. Besides, Forman and Jorgensen (2001) suggested that additional compensation (e.g. monetary reward) should be given to employees in recognition of the additional responsibility of participating in environmental improvement efforts. However, the study of international Organisations indicated that financial incentives were rarely tied to environmental performance (Denton, 1999).

Although Dahlmann et al. (2008) still suggested that an incentive should be involved in motivating employees to implement environmental management programmes, Parker and Wright (2001) argued that developing a good reward programme is not sufficient and it needs to be backed by effective communication of the reward systems. The environmental management programmes, initiatives, and goals of an Organisation should be communicated frequently so that employees know what is expected to accomplish the goals (Desmond and Yuen,

2004). As MacStravic (1990) indicated, communicating EMPs and providing feedback could improve employee relations and satisfaction. However, Chinander (2001) revealed that many environmental management programmes failed to stress the importance of feedback on environmental issues and suggested that communicating environmental related information is an influential factor in improving environmental performance. Likewise, Madsen and Ulhoi (2001) found that employees did not feel properly informed regarding environmental issues and Ramus and Steger (2000) commented that employees are more willing to undertake environmental initiatives when their managers embrace an open style of communication in relation to environmental information. Despite the importance of communicating environmental related information, Seitel (2006) pointed out that employee-relations have sometimes been limited to top-down communication from management to employees. Such one-way communication has caused many employees to be intensely critical of management's unwillingness to listen. Hence, a lack of mutual agreement or a trust gap between management and bottom line employees may bring about deteriorating relationships between Organisations and their employees, especially in the globalization context.

Recently, Stanley et al. (2007) found that the willingness to share information could contribute to performance improvement and Wong (1998) advised that through education and training, employees could share more environmental information (Wong, 1998) and become more committed to continuously improving environmental performance (Theyel, 2000). Govindarajula and Daily (2004) and Madsen and Ulhoi (2001) argued that training programmes should be developed in order to ensure continuous improvement over the long term. Training and motivating all employees about environmental issues could be difficult, especially when environmental concerns are not generally the primary focus of the business. Hence, it is believed that without appropriate feedback and communication, employee efforts may come to a standstill. There is no right way to communicate reward systems to employees and it is up to managers to decide what technique is the most suitable for motivating employees. However, as Parker and Wright (2001) argued, for employees to be committed to goals, they have to be satisfied with their reward programmes for continuous improvement of environmental performance.

In sum, the concepts of management and environmental preservation are connected and are part of the business world through the concept of EM as a component of business management. The consequences of environmental concerns are reflected more and more in improving business performance. For this reason, more Organisations are trying to insert the environmental variable into their processes through the adoption of a system of environmental management. Environmental management systems provide a framework for Organisations that wish to effectively manage their EMPs. It is of particular importance that the Organisation identifies and monitors those important environmental actions which have an influence on integrating environmental values into their business operations. However, the six influential factors discussed in this section do not prescribe substantive environmental performance standards, nor direct which of the possible environmental actions should be given priority. It is important that an EMS must be judged by its effectiveness in delivering better environmental performance and there is certainly a great deal of evidence about the reduction of environmental impact where EMSs are implemented. Despite the growing interest in applying voluntary EMSs for industry, it is necessary to review empirical information derived from systematic experiences of monitoring environmental performance processes alongside the evaluation of available accounting techniques for monitoring EMPs.

2.3 What available techniques allow Organisations to measure environmental performance?

A number of pieces of evidence in the section above show that implementing EMPs could enable managers to see financial benefits more clearly. However, one important question remains unanswered: what techniques are available to assist managers to measure and benchmark their EMPs? Pun (2006) noted that different accounting techniques would have divergent emphases that might lead to different anticipated results. This section therefore assesses available techniques to make a detailed analysis of costs and effects of EMPs.

2.3.1 Benchmarking environmental management practices

It is evident that benchmarking has become a generally accepted business practice (Yasin, 2002). For example, a European study in 1994 suggested that 88 percent of Organisations were involved in benchmarking activities (Voss et al., 1997) and various authors found that benchmarking has been demonstrated as a catalyst for the success of Organisational changes e.g. general changes in Organisational thinking and action (Saw, 1999), improved operational performance (Voss et al., 1997), and business process re-engineering (Thor and Jarrett, 1999). No matter what form of benchmarking Organisations have applied to their business, as Bhutta and Hug (1999) commented, benchmarking generally involves learning about business practices, learning about the best practices of others, and then making changes to produce the improvements that would enable managers to meet targeted goals. Rothenberg et al. (2005) argued that benchmarking can provide a clear signal of success and indicated aspects needing improvement by embedding different forms of benchmarking. For instance, Balm (1996) considered benchmarking as a "gap analysis" in order to help managers in prioritizing resource allocation to improve business performance. Kyro (2004) suggested benchmarking to be an "action research process" assisting managers to strengthen the basis of benchmarking in order to improve implementation. These different forms of benchmarking reflect complex changes that have taken place in the whole supply and competition environment, and therefore it is necessary to consider how the target and nature of benchmarking definitions have changed over the last two decades, based on the changing business environment.

- **Definitions of benchmarking**

Although Rothenberg et al. (2005) considered benchmarking as the most powerful technique for gaining competitive advantage, as with some other definitions in management theories, benchmarking is a complicated concept whose usefulness has recently been argued over. The identification of benchmarking varies between authors according to the time and criteria they focus on. Kyro (2004) argued that

the current state of benchmarking reflected interpretative rather critical thinking and this view supports Bhutta and Hug's (1999) statement that benchmarking has traditionally been used as a problem solving technique in 1990s. This confirms Hammer and Champy (1993) and Oblenski's (1994) findings that benchmarking is not radical enough to keep pace with rapidly changing technology and the globalization of markets and often simply represents playing "catch up". Whenever benchmarking begins, a key issue within the benchmarking literature is that of what to benchmark and it is important for Organisations to ask themselves questions in relation to business objectives before conducting benchmarking processes.

Further to this, Boks and Stevels (2003) raised the importance of gathering data for benchmarking, and of the fact that it is not an isolated process but should be embedded in an overall strategy. Some managers might look at which processes are causing the most trouble while other managers attempt to identify what are the critical success factors. There is a variety of activities that could be benchmarked in an Organisation but managers should know that different focuses are required for benchmarking each activity. For example, Sarkis (2001) argued that benchmarking should evolve from looking at static measures to more dynamic ratios and Boxwell (1994) advised that benchmarking should be used as a guide, not for statistical precision. It is believed that benchmarking as a term has been used widely to refer to many different activities. Originally benchmarking was mainly used as a comparison of performance measures for the purpose of determining how well the Organisation is doing compared to others, and it has been considerably extended to concern methods aiming to improve business processes (Bhutta and Hug, 1999).

Dattakumar and Jagadeesh (2003) reviewed the application of benchmarking concepts in the service sector, which started appearing in a noticeable way only after the 1980's. Recently, a number of authors have attempted to identify how the service sector benchmarks business performance. For example, Min et al. (2002) developed a set of service benchmarks that help hotel Organisations to monitor their service delivery process, identify performance gaps, and take corrective action. Although various authors claimed that benchmarking could be used to

improve business performance, Narayan et al. (2008) noted that compared to the manufacturing sector, benchmarking in the service sector is made more difficult by characteristics of particular fields of applications. For instance, Kyro (2004) commented that service quality and satisfaction involve a strong subjective perspective and it is the customer's perception that counts rather than an objective assessment. Besides, Carpinetti and Oiko (2008) revealed that there are limitations to benchmarking clusters of SMEs. Even though there are no agreed standards involving benchmarking activities, there is little doubt that the central thrust of benchmarking is about learning how to improve business activities, processes, and management. Consequently, it is worth examining in the following part how benchmarking can help Organisations to improve environmental performance.

- **Benchmarking environmental performance**

Some authors have attempted to explore whether integrating benchmarking concepts into EM could improve an Organisation's environmental performance. For example, Matthews (2003) and Owen (2004) noted that some Organisations have become more concerned with the need to provide performance relative to EMPs, and Makrinou et al. (2008) and Bhat (1995) suggested that benchmarking could help improve environmental performance. A review of relevant literature (IHEI, 2006, 2007; HCIMA, 2006, 2007; and Deng and Burnett, 2002) about environmental benchmarking in the hotel industry revealed that only traditional benchmarking forms (e.g. gap analysis and competitive analysis) were applied to hotel Organisations' environmental performance measurements. Moreover, Joseph and Francis (2008) indicated that benchmarking water use should refer to the amount of water consumption rather than the water bill because the water bills embraced not only the charge based on the actual amount of water consumed but also a standing sewage charge.

There is evidence that voluntary associations have attempted to develop benchmarks for hotel Organisations. For example, the IHEI (2002) developed benchmarks for hotel Organisations to measure water performance in order

determine how efficient they are in water consumption compared to the industry standard ratio (see appendix 1). The development of a water benchmark in 1995 was a first attempt to establish such a benchmark for hotel Organisations and it was useful for hotel managers to reduce their water usage. However, this water benchmark only categorized hotels into two types (large size and medium size) with limited description of hotel facilities. Subsequently, in 1998, IHEI developed a more detailed water benchmark with three different kinds of weather and three different hotel types. As Adams (2002) claimed, the size and structure of Organisations has implications for the scale and range of measures and Joseph and Francis (2008) found that quality, age and occupancy rate of hotel are potential factors affecting the costs of operating and maintaining the facilities. Some authors have included different sizes of hotels to develeop performance indicators in different countries. For example, Naukkarinen (2006) established benchmarks for water consumptions for three types of hotels in the Mediterranean area. Moreover, Waggett and Arotsky (2006) studied various sized hotels and developed water benchmarks for UK small and medium size hotels in order to assist managers to reduce water bills. It is expected that their water benchmark could provide useful information for hotel Organisations to improve water performance. Recently, Marinou et al. (2008) studied how small and medium hotel Organisations can improve environmental performance by utilizing the European Union's developed benchmarking methodology. The result is particularly useful in enabling small and medium hotel Organisations to save costs through implementation of energy and water management strategy.

Some hotel suppliers have developed benchmarks for hotel Organisations to measure environmental performance. One example is that Thames Water (2003) has developed benchmark figures and a number of influential factors to guide hotel managers as to how to reduce water usage by studying the water used in 500 hotel Organisations (see appendix 1). In particular, according to its study, Thames Water came to realize that volume of the hotel Organisation (number of guests), and hotel category (hotel star rating) were the most important elements to be considered while establishing some other benchmarks. Besides, Williams (2000) indicated that the selection of an appropriate peer group is absolutely critical to the success of improving business performance. According to a review

of hotels' implementations of environmental management programmes, Accor (2004- 2008) is considered as one of the first hotel Organisations to commit the necessary resources to a genuine environmental policy. Accor has developed different water performance indicators for different types of hotels (from luxury hotels to budget hotels) and Accor's performance indicators serve as a comparable benchmark to other hotel Organisations measuring environmental performance. However, Daniel (1996) argued that it is difficult to identify the likely "peers" and get permission to obtain data in sufficient detail to create an effective comparison. Some Organisations may publicize what they have achieved but it is unusual for them to be open on the more mundane facts of how this transformation was made to work from poor practices.

Hopper and Greenall (2005) pointed out that the increased use of quantitative indicators of environmental performance was considered as offering scope for more meaningful inter-firm comparison and benchmarking. However, Bohdanowicz (2005) claimed that environmental performance indicator standards are difficult to establish. For example, a recent report from a European hotel chain provided a figure of 440 litres per guest night while another source reports a consumption of 224 litres per guest night. These two water performance indicators might mislead management analysis of water performance if managers are not aware of their existence. Moreover, Synnestvedt (2001) identified that there is a lack of standards within the industry relating to what information to disclose and how it should be presented, and cost minimization of data collection is the main reason causing the standardization of environmental information. According to evidence in this section, it is suggested that accurate benchmarking may still be difficult given inconsistencies in the character of overall business environmental information. Therefore, in order to obtain more accurate performance indicators, it is important for hotel Organisations to be aware of a number of available accounting techniques and the reliability and validity of available data while measuring their environmental performance.

2.3.2 Accounting techniques for tracking environmental related costs

Although many Organisations today have incorporated environmental activities into their operations, the vast majority do not have an effective management control system in place to define goals, measure environmental performance, and coordinate the range of activities (Epstein and Wisner, 2005). Some authors (e.g. Jasch, 2009; Parker, 2004; and Burrit, 1993) pointed out that there is a need for managers to track environmental costs because this enables them to better understand the environmental related costs which in turn allow the Organisation to have a more competitive cost structure and ultimately contributes to the bottom line. Schaltegger et al. (1996) also indicated that today's environmental compliance costs are huge and still increasing for many Organisations, and costs of applying techniques to trace environmental related costs are relatively small compared to those of not tracing. In discussing these attributes, it is little wonder that pressures to apply accounting techniques to the important decisions are growing. Four accounting techniques are regularly cited in the literature to assist Organisations in analyzing their environmental performance: investment appraisal techniques, environmental cost accounting system, life cycle technique, and cost benefit analysis.

- **Investment appraisal techniques**

D'Souza et al. (2006) pointed out that managing resources efficiently could provide one mechanism for achieving improved environmental performance at the operations level. Moreover, (2001) commented that integrating environmental investment decisions with better control of resources could add value to Organisations. This is reinforced by Brown and Atkinson (2001) who explained that this value could be gained through detailed forecasting and resource allocation and detailed updates of projected performance attainment on a relatively frequent basis, which should respond to significant information identified and anticipated movements in the Organisation's critical success factors. However, the effectiveness of improving environmental performance may depend on investment in advanced technologies and as Thornton et al. (2003)http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=Published/EmeraldFullTextArticle/Articles/0590200304.html - b40#b40 stated, in the highly

competitive market, most large improvements in environmental performance are linked to expensive investment in new technologies which have been made compulsory by the periodic tightening of regulatory licenses. Therefore, how to select investment appraisal techniques to help a business measure the efficiency of investment in adding value is an important task for managers. A number of accounting control systems are frequently used to encourage and reinforce short-term actions: the conclusion typically reached is that traditional methods of investment appraisal, such as Return on Investment (ROI), Net Present Value (NPV), and Payback Period (PB) are systematically biased towards the short term in the decisions heuristic managers apply in evaluating major investments.

White (2007) noted that the ROI is a way of looking at an investment by considering the cost in relation to the "profit" or return on an investment, but it has not been widely used as a proactive assessment tool. Ismail and Cline (2005) noted that the NPV is a method for evaluating investment proposals based on the net present value that a proposal will generate over its life cycle but criticized the NPV for simplifying computation and not taking account of the continuity of cash flows. Fotsch (1984) claimed that the payback technique was one of the most popular methods in the 1970s and 1980s and Huang and Sakurai (1990) indicated that payback techniques favour a short-term perspective on investments and serve more as a performance measurement tool than as a rigid financial criterion. This is confirmed by a number of authors (e.g. Horngren et al., 2008; and Lefley et al. 2004) who found that the payback technique continues to be popular in relation to sequential investments.

Kirk (1996) referred to various hotel cases that have used the payback method to identify how many years their investment in EM took to reach payback. From evaluating hotel EMPs (e.g. Accor, 2008; Hilton, 2008), it is evident that some leading hotel Organisations are using the simple payback method to identify their return on investment in relation to EMPs. The decision to invest in environmental technologies involves a series of current resources with the aim of generating future benefits. It is believed that substantial savings can be achieved using various water-saving devices in hotel Organisations which use a simple payback method to identify the savings (Cambridge, 2003; EA, 2003; Wessex Water, 2002;

EC, 1998). However, Horngren et al. (2008) and Shim and Siegel (2007) pointed out that the main problem of the payback method is that it is too simple, calculated when a project has uniform cash flow and ignoring the time value of money and profitability. Organisations would fail to incorporate the time value of money and would not consider a project's cash flow after the payback period.

Although there is a number of investment techniques available, Epstein (1996) indicated that a capital investment decision for environmental equipment is typically not analyzed thoroughly; costs are often not fully identified and benefits are ignored. The difficulties confronted by Organisations are not only to be found in the choice between diverse alternative investment appraisal techniques, but also in decisions to invest in more advanced environmental technologies. As Mohnen and Bareket (2007) pointed out, the measurement of an investment cannot be considered in an isolated, independent way, but is a complement to or a substitute for future investments and fits into the overall framework of an Organisation. No method is perfect and applicable to all business types; no matter how thorough, the accuracy of any accounting control system analysis depends on how the costs for the project are calculated. Few authors attempt to use these investment appraisal methods to analyze environmental investment and there is a shortage of information for Organisations to assess the effectiveness of investment in advanced technologies.

- **Life cycle analysis**

Within accounting techniques, the life-cycle analysis (LCA) is one of the most valuable and effective approaches to controlling environmental costs. Yuracko and Morris (2001) defined LCA as the process of identifying and assessing all categories of benefits and costs that occur from a process over the entire period. However, Yuracko and Morris further argued that if environmental costs are considered as a direct financial element while using LCA, then not all costs and benefits would be considered because certain social costs are not quantifiable. Besides, Bhaskaran et al. (2006) observed that LCA can be difficult to track as the standards incorporate environmental impact analysis across diverse and complex

activities. Recently, Blengini (2008) found that the correct expansion of system boundaries in LCA is still a delicate issue that can result in the accounting of certain processes within the system as well as in leaving certain processes unconsidered.

In addition, Gorakzyk and Kulczycka (2005) indicated that LCA is a tool that helps Organisations make better decisions concerning environmental protection, whereas the aim of LCC analysis is to create a cost-effective model for environmental impact assessment. Despite existing life cycle costing (LCC) method descriptions and practicable suggestions for conducting LCC analyses, no systematic analyses of actual implementations of LCC methods exist (Korpi and Ala-Risku, 2008). Kumaran et al. (2001) argued that LCC could show that a product with a relatively low purchase price was not always the best deal and indicated that LCC is an ideal way of assessing the energy requirements of buildings, equipment, and other systems, redefining the environment so that Organisations could focus on profit potential and better define what the true life-cycle costs are. Recently, Steen's (2005) study showed that there has been increased interest in the integration of LCA and LCC because Organisations can reasonably expect that implementation of LCA and LCC will lead to minimization of environmental impact of their activities and to more effective environmental, cost and waste management.

A number of authors have attempted to integrate LCA with other accounting techniques in order to track environmental costs more efficiently. For example, the Life Cycle Environmental Cost Analysis (LCECA) can be regarded as another technique to help managers in analyzing environmental related costs and making the right decisions. As Kawauchi and Rausand (1999) indicated, the LCECA model is affected by LCC and its aim is to include environmental costs in the total cost of the products and to reduce the total cost with the help of EMPs in all stages of the life cycle of a given product. Further to this, Emblemsavg (2001) presented a new method called activity-based LCA (ABLCA), employing the comprehensive activity-based life-cycle assessment method. The ABLCA is a life-cycle analysis method with similar scope to that of the well-known ISO 14000 LCA and is a greatly enhanced tracing of critical success factors, enabling Organisations to

increase long-term profitability. Although these LCA techniques are relatively new ways for managers to control their EMPs in a more visible manner, by redefining the environment in term not of cost avoidance but of environmental profitability, they help to identify real costs and in choosing products and services that maximize long-term return on investment (Bhaskaran et al., 2006). Most importantly, LCA has becoming one technique to manage environmental risks, however little literature in relation to LCA can be found in the hotel industry.

- **Cost-benefit analysis**

Alberti et al. (2000) indicated that it is important to evaluate the costs and benefits of an EMS and Ackerman et al. (2004) noted that cost-benefit analysis is a simple approach to understand because the benefits of a proposed action are easily estimated and compared with the total costs incurred by an activity. Various authors have similar opinions about the application of the cost-benefit analysis. For example, Pearce (1993) pointed out that cost-benefit analysis is a major technique employed to evaluate projects, which provides the researcher with a set of values that are useful to determine the feasibility of a project from an economic standpoint. Conceptually simple, its results are easy for decision makers to comprehend, and therefore it enjoys a great deal of favour in project assessments. Moreover, Linn (2009) suggested that managers need to have a better knowledge of cost-benefit anaysis in order to avoid its misuse and misexplanation.

However, cost benefit analysis suffers many criticisms as environmental issues grow in complexity and pressures increase for managers to trace environmental related costs in order to obtain a cost reduction. For instance, Munasinghe (2007) indicated that environmental related costs and benefits are not easily quantifiable within the current economic paradigm and this has long been the subject of debate among researchers who seek to assign economic values to, in particular, environmental consequences of business activities. Munasinghe revealed that the debate over cost-benefit analysis is focused on its possible value in reducing the perceived financial burden and the complexity of traditional regulatory approaches. Moreover, a number of factors influencing the application of cost-benefit analysis have been identified by various authors. For example, Moore (1995) reviewed

relevant literatures and summarized one important argument that occurs regularly in the literature: cost benefit analysis could be excessively expensive and time consuming in relation to governmental regulations protecting the environment. Moreover, Pearce (1993) commented that cost benefit analysis itself does not make decisions, but only assists managers to make decisions. Besides, Hanlet and Spash (1993) argued that cost benefit analysis is quite complex in practice, because it raises a number of assumptions about the scope of the assessment, the time-frame, not to mention technical issues involved in measuring the benefits and costs. Recently, Ackerman (2008) evaluated relevant literature and concluded that although cost benefit analysis has been widely accepted as a technique for making public policy decisions, it is a failure both in theory and practice.

According to arguments in this section, decisions concerning the environment always involve benefits and costs, some with monetary values and some without. No matter what kind of accounting technique is used by an Organisation, managers should know that using accounting techniques to monitor EMPs is not an extra cost if done with careful planning. Ideally, decisions are made where the benefits outweigh the costs and if the benefits are greater, the project is considered feasible. It is important to acquire knowledge about the use of cost-benefits analysis to measure positive and negative effects and to translate such effects into monetary terms. Consequently, where Organisations' resources are affected by EMPs, monetary values need to be weighed and measured in order to identify how efficiently they are performing. However, cost can be affected by not only the consumption of resources but also the price of resources; and therefore the following section assesses an accounting technique, variance analysis, in relation to the analysis of the two elements: price and consumption.

2.3.3 Variance analysis

The superficial cost analysis could lead to spurious explanations, or worse, management never fully comprehending what caused the variance. In the 1980s, variance analysis was proposed as a framework to explain these deviations and to improve managerial control and effective decision making (Talbott et al., 1993).

Moreover, Horngren et al. (2008) indicated that employment of variance analysis to measure performance could help businesses to identify the degree to which the set objective is met. The set objective may be seen as a control device, with conformity to standards and the elimination of any variances (e.g. usage variance or price variance) which occur. In this context, standards may be viewed as a static base against which to measure actual business performance. However, current benchmarking techniques for water performance have focused on the "volume" consumption and most assumptions in relation to cost saving were based on the reduction of water consumption and not "real" reduction of cost. For example, in a recent study, Makrinou et al. (2008) concluded that reduction of water consumption led to a significant cost saving without relating to water price. This conclusion may overlook the relationship between price and consumption because these two elements are the essential components of a water utility bill. Earlier studies have determined costs associated with water in terms of total charge on the water bill. However, water bill charges comprise two elements, namely actual volume of water consumed and the actual price per unit of volume, influencing cost reduction.

Within the variance analysis paradigm, Sulaiman et al. (2005) and Mitchell (2005) commented that the standard costing system has been a useful technique in planning and controlling performance evaluation. In general, the standard costing system is a model for variance analysis where variance is the difference between standard prices and quantities (in usage) on the one hand and actual prices and quantities on the other hand. Moreover, an example from the hotel sector is Harris and Hazzard (1992) considering the standard costing system as an extension of budgetary control, providing more control information in the form of additional variances. They adapted the standard costing technique (see figure 2.3) to analyze food costs, and their adapted standard costing system was established through identifying an objective relationship between specified inputs and expected outputs.

Figure 2.3: formulation of standard costing technique for food costs

A.	:Standard usage x standard price = standard cost
B.	:Actual usage x standard price = standard price of actual usage
C.	:Actual usage x actual price = actual cost
D.	:(A) – (B) = usage variance
E.	:(B) – (C) = price variance
F.	:(A) – (C) or (D) + (E) = total cost variance

Standard price and usage are monitored as a basis for determining the extent to which expectations are realized, and variances of price and usage from standard can be calculated and analyzed. Both price and usage variance will be considered as "UNFAVORABLE" if costs exceed standard, and the variance is regarded as "FAVORABLE" if costs are below standard. No attempt has been made to apply variance analysis to hotels' measurement of environmental performance. Since the mid-1980s, the standard costing system has come under intense criticism, especially as Cheatham and Cheatham (1996) noted that the usefulness of the information provided from analysis of variances related to standard costs has been questioned in term of quality. Various authors suggested that Organisations in today's intensely competitive environment may find standard costing and variance analysis to be less relevant for cost control and performance evaluation. For example, O'Regan and Sims (2007) revealed that the variance analysis technique rarely helps managers to understand the dynamics of competitive behaviour and often fails to bridge the gap between theory and practice. This may be seen as restrictive and inhibiting action likely to lead to progress in business profitability and efficiency.

Similarly, Fleischman and Tyson (1998) indicated that the application of standard costing in measuring performance may not assist managers in developing appropriate business strategies; and even Hansen and Mowen (2002) argued that standard costing may lead to dysfunctional behavioural when using it as an operational control tool. A number of researchers reported that as a result of the

changing manufacturing environment, the applicability of standard costing and variance analysis as a planning and control technique is decreasing (e.g. Lucas, 1997; Bromwich and Bhimani, 1994). Based on the argument about the usefulness of standard costing, it is suggested that the use of standard costing to evaluate performance needs to be revised for this rapidly changing business environment.

Contrary to the criticisms of the usefulness of the standard costing system, a number of surveys recently showed that the majority of Organisations in developed and indeed developing countries use variance analysis for cost control and performance evaluation (e.g. Zoysa and Herath, 2007; Sulaiman et al., 2005; Fullerton and McWatters, 2004; Joshi, 2001; Wijeward and Zoysa, 1999; Guilding et al., 1998; and Lyall and Gramham, 1993). This is reinforced by Sulaiman et al.'s (2005) findings from reviewing relevant literature in relation to traditional accounting techniques, that use of variance analysis remains strong and Hilton (2002) claimed that the use of standard costing is less expensive than an actual or normal costing system. Thus, it is believed that the standard costing system is still a popular accounting technique for managers to measure and control business performance. The important issue is adopting the purpose of an accounting based variance techniques in the isolation and analysis of variables that impact on separate functions of business Organisations. In the case of water management, the variables are the volume of water consumed and contracted price of water per unit of volume. This provides an insight into water operation function and water purchasing function.

2.4 Evaluation of environmental management initiatives in the current accounting system

After identifying why and how businesses embrace environmental issues and what accounting techniques can be used to implement environmental management programmes, this section aims to evaluate if there is any change in traditional accounting in relation to EMPs and to understand how key employees influence the integration of environmental issues into complex accounting systems.

Particular attention will also be given to identifying influential factors in integrating EMPs into hotel accounting systems.

2.4.1 Integration of environmental issues into the traditional accounting system

Richardson (2004) claimed that conventional accounting presents the internal financial flows of an Organisation in a summarized profit and loss account format and the financial information may be restated in a variety of different ways to draw out environmental related information. Some authors indicated that the purpose of introducing environmental issues into accounting is to make the link between environmental and financial performance more visible and to give better information to help businesses improve performance (Howes, 2004; Schaltegger and Burritt, 2000: Bartolomeo et al. 2000). However, the World Resources Institute's report (WRI, 2002) and Schaltegger et al. (1996) claimed that most environmental related costs are not considered in traditional accounting systems and that it is difficult for managers to trace environmental related costs accurately. For example, the results of studies of a number of Organisations (Amoco Oil, Ciba-Geigy, Dow Chemical, Du Pont, and S.C. Johnson) showed that hidden in the shadows of the information failure created by Organisation's traditional accounting practices are unexploited opportunities to increase profits (Ditz et al., 1995). Moreover, the study of Spanish Organisations from Gonzaley et al. (2008) revealed that most Organisations are not truly changing their traditional perceptions about the environment, even in those cases where generalized structural and Organisational changes are taking place. Consequently, as Phillips (1999) commented, traditional accounting-based systems are no longer satisfactory for Organisations to improve business performance.

Likewise, Schaltegger et al. (1996) noted that many environmental related costs are not considered in conventional accounting and this is supported by Sarkar's (2006) view that it is difficult to integrate environmental issues in a manner that expresses the linkage between the environment and the economy. The traditional system of accounts incorporates those assets which can only be switched for money and used in the production of goods and services that have merely

economic value. In particular, most intangible costs are usually not directly reflected in the traditional accounting systems (Burritt et al., 2008; Burritt, 2004). For example, image and relationship costs have affected the Organisation, but neither is readily quantifiable nor recognized by the Organisation (Schaltegger et al., 1996). Moreover, from a legal point of view, environmental related costs often occur outside of an Organisation's accounting system, so those environmental related costs are often treated as extra costs (Schaltegger and Burritt, 2000).

It is important to estimate real costs and identify changes in processes to reduce waste, reduce resource consumption and recycle waste (Wilmhurstive and Frost, 2001; and Rappaport, 1998). However, Sarkar (2006) argued that the high dynamics of change and competitive Organisational environments are creating complications, so effective decision making requires knowledge of how to assess whether the Organisation's operations have delivered or will deliver on its business objectives, and how the Organisation's performance compares with those of its competitors. Hence, as Schaltergger and Burrit (2000) claimed, any estimation of future costs faces a substantial problem because the evaluation of the future costs of pollution prevention and environmental liabilities is particularly difficult, since neither the future technology nor the future demands of stakeholders are known. In addition, Gupta (2005) discussed two problems with using conventional accounting systems to budget for the costs of environmental improvement. One is that traditional accounting systems are reactive and tend to focus on additional costs caused by environmental regulations rather than on the benefits provided by opportunities that are conjoint with changes to improve environmental performance. Another is that most managers do not take into account the costs incurred when environmental protection is neglected by the Organisation.

Although the arguments above indicated that traditional accounting practices seldom clarify environmental costs in overheads and seem unrelated to issues in Organisations, some leading Organisations have gone beyond traditional accounting and have successfully made the environmental costs and benefits more visible. For example, Dow is recognized as a leader in environmental cost accounting because of its investing in pollution control and measures of the

relative environmental costs (WRI, 2002). Besides, Procter & Gamble (P&G) learned several lessons by taking the notion to a new height with its TCA (total cost assessment) approach to evaluate waste reduction projects (Fisher, 1995). Moreover, the study of developing methods to account for environmental costs in WRI's case studies of nine US Organisations (Du Pont and Dow are among the participants) indicated that most Organisations are mandated to account for environmental costs because they affect the bottom line.

Evidence in this section suggests that a business could integrate environmental information into its accounting system to cut down operating costs or even day-to-day overhead costs because environmental information enables management to control, reduce or eliminate unnecessary costs. However, it is argued that conventional accounting systems neither reflect environmental impacts caused directly and indirectly by an Organisation nor sufficiently reveal environmental costs, so there is a shortage of environmental accounting related information when improving environmental performance in general. More specifically, the integration of environmental issues into the hotel industry needs to be evaluated in the following part in order to identify if there is any change and adoption of new methods in hotel accounting systems, in relation to environmental issues.

2.4.2 Integration of environmental issues into hotel accounting systems

It is evident that the hotel industry was slow in developing environmental accounting and reporting in the 1990s. For instance, Brown (1994) is the first author who attempted to link environmental issues to accounting systems in the hotel sector and he could not identify comprehensive environmental tracing systems. Although the hotel industry is included in Tsang's (1998) study of corporate social reporting in Singapore, it was found that the hotel industry had the lowest percentage (3/16) of Organisations with environmental reporting. Moreover, in Mathews' (1997) reviews of the past 25 years of social and environmental accounting literature none of the studies are related to the hotel field and no initiatives by the hotel industry in environmental related accounting

could be identified. Thus hotel Organisations, in general, did not use available environmental related techniques and information to improve their environmental performance. Recently, utility costs have been considered an opportunity to cut down operating costs: the utility costs should be modified according to the businesses' needs and requirements, while remaining consistent with generally accepted accounting principles. For example, the Department for Environment, Food and Rural Affairs (DEFRA, 2005) pointed out that utility costs should be viewed as a variable cost that can be managed, not as a fixed cost. To reinforce this view, Adams (2006) noted that resource utilization should be focused on while analyzing operating statistics. However, the Uniform System of Accounts for the lodging industry (2006) (international industry standard) is developed based on departmental activities and, given that hotel utilities are recorded as undistributed expenses, it is difficult to separate utility usage into different departments unless the hotel has installed sub meters in each department. Some Organisations may think utility costs are too insignificant to bother with, but they may represent a substantial proportion of controllable costs. Collini (2006) indicated that hotel Organisations could save costs by assessing utility costs more carefully, but, historically, the hotel industry has categorized utility costs (e.g. energy and water costs) as uncontrollable operating expenses. This is reinforced by Uniform System of Accounts for the Lodging Industry (USALI, 2006) which found that in the hotel uniform system of accounting and expense format, utility costs commonly appear on a supplementary schedule supporting the other expenses reported on the statement of income, under the heading of undistributed operating expenses, with no analysis beyond cumulative utility billing charges.

In addition, there is difficulty in converting the environmental impact produced by hotels into a corresponding environmental cost (Chan and Lam, 2001). Although the literature discusses attributes of financially based EMPs (e.g. Lindell and Karagozoglu, 2001; Lyon and Maxwell, 1999; and Porter and Van der Linde, 1995), much of it has been descriptive and not specifically addressing investment decisions made in response to environmental matters. It is generally believed that the unenthusiastic response to reducing resources used in hotels is due mainly to the anticipated high capital cost associated with the purchase of advanced equipment (see section 2.1.1) and increased labour involvement. Evaluation of

EMPs in Accor and Hilton showed how much they saved in water usage by installing more efficient showerheads and new toilet tanks; but they did not report how much they have actually saved by reducing water usage. Therefore, it is difficult to identify whether the hotel groups investing in these water appliances have actually saved costs. Moreover, Phillips (1999) claimed that hotel Organisations' traditional accounting performance measurement systems can unfortunately no longer capture the relevant performance issues in this complex Organisational environment. This major deficiency has influenced hotel Organisations to become increasingly frustrated with existing performance measurement systems that do not assist them in their quest for competitive advantage. To extent this view, Shi-Ming and Burnett (2000) identified the fact that some indicators of overall utility (e.g. energy) consumption in hotels of a similar type are highly diversified and often difficult to grasp in detail.

Although no authors have found hotel Organisations integrating environmental issues in their accounting system, some recognized problems and attempted to suggest how hotel Organisations could improve their control systems to monitor EMPs in a better way. For instance, Brown (1996) advised that hotel Organisations need to adopt a pro-active response to environmental issues, and that strategy should be modified in order to match the control system. Moreover, Behn (2003) recommended that managers need to think seriously about the managerial purposes to which performance measurement might contribute and how they might deploy these measures. Some voluntary associations attempt to help hotel Organisations with measuring and reporting performance. For example, IH&RA are involved in the reporting process within Global Reporting Initiatives (GRI) in order to ensure that hospitality-specific interests are addressed in this international initiative. They are trying to establish the limits to which hotels can be asked to report to their stakeholders on measures employed to ensure economic, social and environmental sustainability. However, while many hotel Organisations may not currently be able to provide the information sought by these indicators, it is essential that they be made aware of the growing need to produce environmental related accounting information, so that they could take appropriate steps towards compiling and providing it (IH&RA, 2002). Yet, little environmental related information has been found in hotel accounting systems in recent studies

and there is a need to integrate environmental issues into hotels' accounting systems in order to provide a clear picture of how EMPs affect overall business performance.

2.4.3 Influential factors in integrating environmental management practices into accounting systems

No matter whether the literature considers EM as a threat or benefit, the prevailing rationale behind business management is profitability. The ultimate aim of a commercial hotel Organisation is to make profit in order to survive, and environmental problems will become benefits if more and more hotel Organisations are considering environmental issues as profit related goals. Hence, it is important to evaluate what conflicts exist by evaluating relevant literature in order to help managers better understand the problematic nature of EMPs, and factors influencing integrating EMPs into current accounting systems.

- **Different perceptions of environmental issues**

Some authors (e.g. Gunby, 2009; and Elijido-Ten, 2007) noted that decision making in an Organisation is often induced by top management and integrating environmental issues into the accounting system could be a powerful tool in achieving this objective because financial analysis is at the heart of business. Gunby (2009) argued that managers' views could influence business performance and Tzschentke et al. (2004) noted the necessity to understand the reasons behind managers' decisions and attitudes in order to improve environmental performance. Not all managers have the same attitude toward integration into business processes but various authors (Bahmed et al. 2009; Tzschentke et al. 2004; and Rondinelli and Vastag, 2000) argued that employees' and managers' behaviours and views are greatly challenged while adopting EM. Some considered that a "business-environment" relationship based on good EM is capable of improving both the environment and business performance (Zutshi et al., 2008; Ruiz-Tagle, 2008; Sharma and Vredenburg, 1998). Since the early 1990s, the impact of different aspects of the environmental problem has been

analyzed and most studies have fitted into the group which tends to perceive environmental issues as an opportunity to improve business performance (Goosey, 2000; Lyon and Maxwell, 1999; Hart, 1997; Porter and van der Linde, 1995; Polonsy, 1994; and Schmideiny, 1992).

On the other hand, a number of authors pointed out that some managers regard the environment as a threat to industry, interpret environmental issues as a threat to profitability, attempt to refuse their environmental responsibilities, (e.g. Lozano and Valles, 2007; Sena da Silva and Dumke de Medeiros, 2004) and attempt to avoid approaching environmental issues, so could miss opportunities of cutting costs (e.g. Chatterjee and Mir, 2008). Consequently, as Penny (2007) and Callens and Wolters (1998) commented, some decision makers could fail to extrapolate from their decision-making process to consider creating an opportunity to improve business performance because of a short sighted vision. Despite a number of benefits, some Organisations are reluctant to take a more aggressive and proactive approach to EM (Lozano and Valles, 2007). It is not surprising that some businesses still assume the environment is a cost while Organisational decision makers remain quick to associate EM with costs. Although it is evident that some Organisations fail to recognize environmental issues as an opportunity to improve business performance, some authors do recognize benefits of approaching environmental issues in hotel Organisations. For example, Marinou et al. (2008) claimed that the identification of environmental opportunities helps hotel managers to better manage resources. Accordingly, it is believed that if hotel Organisations were motivated to become environmentally proactive, then EM could lead to a more efficient use of resources and improve Organisations' performance (see Marinou et al., 2008; Waggett and Arotsky, 2006; and Mensah, 2004).

In the 1990s, Catasus et al. (1997) claimed that "environmental management is something beyond traditional management"; some hotel Organisations have been making environmental decisions for years. Yet they have been slow to make environment a core business issue (e.g. Razidor, 2006-2008; and Hilton hotel group, 2006-2008) and, according to the evidence, the hotel industry, in general, is less active in implementing EMPs. Most studies and surveys were conducted only

with Organisations' top managers (Gunby, 2009; Bahmed et al. 2009; Tzschentke et al.2004; and Rondinelli and Vastag, 2000). This is confirmed by Zutshi et al. (2008) who stated that little literature relating to the financial people's points of view towards environmental issues has been found. Therefore, it is important to understand how key managers and financial people could influence the way of operating businesses when dealing with environmental issues.

- **The influence of key managers' commitment and knowledge**

Elijido-Ten (2007) and Dobers et al. (2001) commented that management interest for the environment is becoming a factor influencing the decision to incorporate environmental activities into business strategic plans. Moreover, Zutshi et al. (2008) and Govindarajulu and Daily (2004) pointed out that lack of contribution and support from managers, and resistance from employees were the main challenges experienced during EMS implementation. This reinforces Penny's (2007) view that the major barrier in managing EMPs to improve effectiveness and competitiveness is that managers tend to overlook potential environmental opportunities. Since the 1990s, there has been increasing evidence that most top managers are willing to approach environmental issues and consider "greening their business" as an important part of being competitive in the marketplace (see Winsemius and Guntram, 2002; Peattie and Ring's survey, 1993). However, Barnes (1999) argued there is a wide gap between the formulation and implementation of environmental policy and Steer (2002) revealed that different tasks could affect employees' commitments to implement environmental management programmes. This reinforced Allen and Meyer's (1990) view that commitment is higher when employees have a broad job scope, arguing that a wider range of duties and responsibilities means employees experience more challenges, hence becoming more committed.

Recently, Yiing and Ahmad (2009) found a positive relationship between leadership behaviour and Organisation commitment. However, only far-sighted managers are beginning to realize that they must develop innovative strategies to deal with environmental problems effectively (Lesourd and Schilizzi, 2001;

Holliday, 2001). A recent study conducted by Dahlmann et al. (2008) revealed that managerial responses to environmental issues remain reactive and profit oriented. These recent studies confirm what Hind et al. (2009) and Karlson and Imrell (2003) claimed – that there is a need for a relatively high level of environmental competence to develop responsible leadership in order to foster improvement of business performance. Therefore, to attain a higher degree of environmental competence, managers might first require knowledge to assist the implementation of environmental management programmes.

In particular, various authors found that accountants could help Organisations take a proactive approach to addressing environmental issues to improve business performance (Kuang-Hsun et al., 2006; Rezaee and Elam, 2000). However, focusing on the connections between EMPs and management accounting functions, accountants' involvement in environmental issues was limited, as suggested by Adams (2002). For example, Gray et al.'s (1993) report about studies in Canada, New Zealand and the UK concluded that accountants are rarely involved in the improvement of Organisations' environmental matters. Moreover, several authors, such as Wilmshurst and Frost (2001), Power (1997), Bebbington et al. (1994), and Lee (1989), carried out similar studies and found similar results. Further to this, Medley (1997) stressed that financial accountants do not always have adequate training to be able to audit environmental information. Accountants may therefore have to cooperate with experts and advisers from other disciplines.

However, Burgess (2007) argued that if the concerns expressed by accountants are not addressed by hotel managers, then inevitably standards of control will suffer, costs will rise and hence profitability will be negatively affected. Moreover, most research about accountants' views of environmental issues did not investigate deeply enough to provide additional explanations of why accountants were of limited use in the monitoring of EMPs. Only Nyquist's (2003) study investigating accountants' experiences, training, and attitudes to embracing environmental issues in the accounting system has shed some light on their opinion about environmental information. Moreover, Medley (1997) indicated that there is a considerable opportunity for accountants in both the understanding and

management of environmental issues. Medley also claimed that an accountant does not necessarily have adequate training to be able to provide a true verification of all environmental accounts, but at least it is possible to ensure that auditors understand what they should be looking for, and where they can seek assistance in this area. This is reinforced by Pahuja (2007) who indicated that most Organisations prefer appointment of external duly qualified environmental auditors for this purpose. It is evident that there is a limited involvement of accountants in EMPs and there is a need to train accountants or relevant employees toward their implementation, because of the shortage of experts to audit EMPs.

- **Short term versus long term business performance**

Manaktola and Jauhari (2007) noted that hotel Organisations should invest in environmentally friendly practices and look at long term gains. This reinforces Arago´n-Correa et al. (2004) and the commission of the European Communities' (1992) views that EMPs should be regarded as a long-term process to achieve business objectives. However, Faulkner et al. (2005) found that some Organisations are still affected mainly by short term rather than long term imperatives although they recognize the opportunities of implementing EMPS. Faulkner et al.'s finding confirmed Shrivastava's (1996) statement that businesses are facing the contradictory pressures of managing short-term profitability while striving for long-term environmental performance. Recently, Faulkner et al. (2005) claimed that it is difficult to reconcile environmental performance from a short term perspective when EMPs carry a cost. Therefore, environmental issues are often given low priority by an Organisation because environmental initiatives usually involve short term costs and long term benefits while business performance is usually measured in the short term (Faulkner et al. 2005; Blair and Hitchcock, 2001; Kirland and Thompson, 1999). In general, business performance is measured in terms of several months to a period of a maximum of 5 years. On the other hand, environmental performance will be measured in decades, even in generations (Blair and Hitchcock, 2001; Kirland and Thompson, 1999; Bhargava and Welford, 1996). As result, time measurement between short-term benefits (financial performance) and long term practices (environmental management)

could influence managers' perceptions of environmental issues because most Organisations perceive EM as an expensive endeavour from a short-term perspective (Kirland and Thompson, 1999). Moreover, Faulkner et al.'s study (2005) revealed that although some managers do see longer term opportunities for potential benefits from a pro-active stance on environmental ethics, the majority adopted a short-term view, seeing environmental policies as incurring identifiable costs even though they might also confer uncertain longer term benefits. The short-term satisfying perspective remains more prevalent than the long-term opportunity seeking stance and this is supported by Butler et al. (2003) who stated that short-term costs are one of the major drivers encouraging the continued adoption of unsustainable technology and business processes.

Further to this, Faulkner et al. (2005) argued that costs and benefits associated with EMPs may not offer a true reflection of business measurement because some are difficult to quantify and estimate in the short term. The EM may entail some short-term costs, but when factoring things in the long-term it is not a potential cost, but potential profit. Recently, PricehosewaterCooper (2009) found that many businesses embraced EMPs have successfully reduced operating costs and environmental impacts. In the hotel industry, in the 1990s, Olsen et al. (1992) noticed that the majority of hotel Organisations related environmental information to short-term decisions. This argument is in agreement with Brown's study (1996) which showed that most hotel Organisations are not as yet taking a pro-active approach to environmental concern and most environmental related actions were undertaken in financial related areas. However, in recent research, Manaktola and Jauhari (2007) suggested that hotel Organisations should be aware of the need to relate EMPs to long-range plans in order obtain potential benefits.

- **Business size**

A number of studies found that the Organisation size plays an important role in implementing EMPs. For example, Russo and Fouts (1997) revealed that larger size Organisations faced stricter environmental regulations due to their visibility and needed to have higher standards to meet social expectations for acceptable

environmental performance. Most of the Organisations cited in the literature as implementing EMPs are international Organisations (e.g. DuPont, Shell, or BP) and most environmental related information found in the hotel industry is also from large size hotel Organisations (e.g. Accor, Hilton group, Razidor). On the other hand, Hillary (2000) and Ludevid (2000) pointed out that small size Organisations tend to ignore the importance of environmental related issues and have difficulty engaging in any improvements to do with the environment. This is reinforced by Pryce's (2001) survey, which showed that no small and medium size hotel Organisations had implemented a formal EMS. Recently, Lee (2008) found that the less financial resources and capabilities Organisations have, the less willing they are to handle environmental issues. This view supported D'Regan and Sims' (2007) view that some popular accounting techniques, e.g. variance analysis, are rarely used in small and medium Organisations owing to inadequate resources and skills.

In addition, a number of authors identified numerous obstacles to implementing EMPs in small size Organisations: lack of information for training and promoting win-win scenarios (Tilley, 1999); low response rate to environmental issues (Meritt,1998); misunderstood questions and misinterpreted answers (Groundwork,1998). D'Regan and Sims (2007) suggested that if medium and small size Organisations could overcome problems of researching environmental issues this would facilitate their greater involvement in environmental areas and wiser application of EMSs. In the hotel industry, through assessing published environmental related documents, it was found that large hotel groups, e.g. Accor (2005, 2008 and Razidor (2005, 2008) had integrated environmental issues into their long term plans and few small and medium size hotel Organisations had considered the environment as an element in their long term plan. This is confirmed by Dahlmann et al.'s (2008) study which showed that small and medium Organisations appear to rely on a relatively short term planning horizon, which ultimately stops them from proactive environmental planning.

Moreover, the management of capital expenditure is a difficult task to any hotel business because the magnitude of responsibilities involving capital expenditure will vary with the size of the Organisational structure. These responsibilities in

large Organisations may be in the hands of the owner or the general manager may play a more significant role. Besides, planning and budgeting for decisions involving capital expenditure requires knowledge of the expected lifetime of various elements of the facility and the cost of their replacement (Stipanuk, 2002). Importantly, Ilomaki and Melanen's (2001) study revealed that, on average international standards (e.g. ISO, GRI, or EMAS) do not provide much impetus to implement EMPs and measure environmental performance in medium and small size Organisations and international standards might confuse newcomers. This view is reinforced by Koroljova and Voronova (2007) who say that the traditional view of these international standards is they are often make it too expensive and too complex to implement EMPs on a daily basis in small and medium Organisations. Likewise, McWilliams et al. (2006) and McWilliams and Seigel (2001) argued that the size of an Organisation is an influential factor because larger Organisations almost always have lower average costs associated with EMPs than smaller ones. Hence, there is a need to look into opportunities for improving environmental performance in a simple way for small and medium Organisations, for example in the hotel industry.

2.5 Main findings of the literature review

The structure of the literature chapter is here reviewed step by step in order to provide the theoretical background on how to improve environmental performance and in turn to identify critical activities and techniques of improving environmental performance, which ultimately contribute to the bottom line. A number of findings are identified from literature, as follows:

a) The investigation of how hotel Organisations apply classical EMS to implement EMPs

An EMS provides an opportunity for businesses to perform regular internal environmental benchmarking, and Matthews (2003) noted that many businesses are implementing formal EMS, such as ISO 14001 EMS, across their Organisations (e.g. IBM, Ford, and General Motors). Moreover, the Department for Environment Food and Rural Affairs (defra) pointed out that ISO 14001

specifies requirements for an EMS to enable Organisations to develop and implement policies and objectives which take into account legal and other requirements. Hence, it applies to the environmental aspects that the Organisation identifies as those which it can control and those which it can influence. However, in addition to ISO 14001, there is a lack of conceptual EMS to integrate the available environmental related information into hotel business structures, especially those of small and medium size hotel Organisations. If the problem remains undefined or incorrectly defined, the time and effort of implementing an EMS will be wasted and costs generally will increase. Moreover, it is argued that an EMS is not just seen as a paper chasing exercise because the better the performance in implementing an EMS, the lower the costs will be, resulting in more profit. Consequently, identifying influential factors in an EMS should be considered as a means for hotel Organisations to monitor and improve environmental performance.

b) Evaluation of the relationship between monitoring systems and environmental performance

It is found that little innovation has occurred in tracking environmental related cost within management accounting practices and there are many issues that deserve research attention. For example, it is identified that there is a lack of tools to differentiate between environmental savings (e.g. reduced resource consumption) and cost savings (i.e. the reduction in costs that result from that reduced consumption). Although a range of techniques has been used to improve environmental performance, none of these studies provided any conclusive claim for the usefulness of these techniques. Apparently, the more accurate the available information is, the more value it has for improving environmental performance. This can only be achieved by acquiring an understanding of existing environmental impacts and performance, while identifying and implementing the necessary improvements. Most importantly, the use of relevant environmental techniques to monitor EMPs is a major source of information to reflect relevant environmental performance. In particular, accounting information is valuable for purposes of measuring actual performance against established goals.

c) Assessment of techniques to measure and improve environmental

performance

The importance of relating EMPs to accounting emerges as clear issue, but the number of studies on using accounting techniques to measure environmental performance has remained limited. Therefore the purpose of assessing relevant literature in relation to variance analysis is to consider adoption and application of standard costing principles and techniques in measuring environmental performance and to explore the approach for improving the knowledge and understanding of environmental performance. The extent to which price variance and usage variance individually have a role in modern business is open to question in measuring environmental performance. Hence, it is necessary to emphasize both the lack of tracking and measuring of environmental costs and the lack of any attempt at analysing the key elements that impact on utility (e.g. water) costs. Thus, it may be worth evaluating whether variance analysis is a useful accounting technique for measuring and improving environmental performance.

d) Evaluation of environmental benchmarking in relation to environmental performance

There was no evidence of innovation to gain an understanding of how (more efficiently) utility (e.g. water) consumption could be assessed against existing benchmarking information. Hence, it is believed that current environmental benchmarking systems offer little in the way of opportunity for facilitating EMPs and improving environmental performance. This is due to a lack of clear definition for environmental benchmarking. It is identified that information disclosed is often unrelated to an Organisation's actual performance or that the analyses of relationships between environmental and financial performance or between environmental disclosure and financial performance have revealed numerous inconsistencies. It is important to acquire different environmental benchmarks because the more objective the measure of performance is, the more likely Organisations will be to succeed in improving business performance.

e) Most EM concepts relate to bottom line concern

It appears that the bottom line concept still dominates business decision making: the majority of evidence was based on surveys while few authors had collected

numerical environmental cost data. Most costs associated with environmental activities may not offer a true reflection of longer term benefits, some of which are difficult to quantify or estimate in the short term. Consequently, assumptions in relation to the EM concept were based on superficial data and there is a need to collect financial numerical data to reinforce Porter's EM concept. Moreover, Organisations should take into account not only the profit bottom line of their business operations, but also integrating monitoring activity into EMPs, which has become an important factor to extend Porter's win-win concept.

f) Lack of managers' knowledge and exprience of implementing EMSs

The literature review identifies the lack of managerial knowledge to be an internal barrier, and few authors have investigated the role of accountants in improving environmental performance. It is important for accountants to engage with the environment as part of the Organisation's EMPs by looking for better accounting practices in relation to environmental issues. Accountants were found not to have stepped out of their traditional role because they continued to focus on recording data and measuring performance. It is argued that the implementation of EMS does lead to an increase in environmental awareness; however, due to the immaturity of Organisational experience of EMS, it takes time before it can be conclusively proven that EMS does significantly improve environmental performance. Therefore, it is considered that insufficient knowledge about environmental issues could mislead managers into implementing EMS in the wrong way which could threaten business profitability.

Chapter Three Research Methodology

This chapter outlines the methodology employed to find out how the hotel Organisation under study controls and monitors EMPs to improve environmental performance. The chapter is divided into four sections. It begins by introducing three aspects of research - philosophy, political, and technical issues. Secondly, the selection of the qualitative exploratory approach is justified, presenting both the deductive and inductive aspects. Thirdly, the research process, which was divided into five stages – preparatory, literature review, fieldwork, data analysis, and write up – is introduced stage by stage. Finally, the issues of validity and reliability are also discussed in this chapter.

3.1 The philosophical basis of the research design

Different researchers have different points of view about research. Some may emphasize the value of the research; others may stress the importance of the nature of the research. Therefore it is important to understand the basic philosophy of this research since this has a significant impact on what we are investigating and on understanding the issues (Teddlie and Tashakkori, 2009). Veal (1997) regarded the nature of research as an important factor and identifies three types of research corresponding to three functions: descriptive research – to find out; explanatory research – to explain; and evaluative research – to evaluate. In some cases, research projects concentrate on only one of these functions; in other cases they combine two or more of them. This project combines exploratory and explanatory research to help the researcher explore why hotel organisations need to embrace EM, and then explain how EMPs affect the hotels' financial performance. Different research objectives also lead to different research approaches. Veal has identified a number of cross-disciplinary approaches and dimensions of research, including induction versus deduction; experimental versus non-experimental methods; positivist versus interpretive approaches; and quantitative versus qualitative. These different research approaches represent different ways of conducting research which would lead to different results.

Therefore, this section uses Easterby-Smith et al.'s (2004) broader perspective of philosophical, political and technical issues to explain and justify the preferred research philosophy, approaches and methods.

3.1.1 The Philosophical aspect

Relating to the philosophical aspect, Easterby-Smith et al. identify two main viewpoints as the positivist paradigm and phenomenological paradigm (see appendix 3). The main viewpoints focused on are issues of basic beliefs, the focus of the researcher, research design, preferred methods, validity, reliability and generalisability. This research design has been influenced by the research philosophy known as phenomenology, or interpretivism. The researcher believes that the nature of reality is subjective; this research actually developed from a debate on EMPs between two authors and aims to understand how a business manages EMPs and how they affect operating costs. It is believed that the beliefs and background of a person affect the research design and cannot be separated from the research subject. Using the interpretivist paradigm, the research process has been designed using multiple methods of documentation, archival records, and interviews to explore the details of EMPs that will hopefully motivate hotel organisations to integrate EM into business management. It is important to note that the researcher as a person plays a significant role in the production and interpretation of data, so the researcher's identity, values and beliefs cannot be entirely eliminated from the research process. As Travers (2004) indicated, each researcher brings a set of epistemological assumptions into the research process, sometimes unconsciously, and these influence how the researcher will collect and interpret the data.

A number of authors (Sekeran, 2002; Gill and Johnson, 2002; Gummesson, 200; and Sarantakos, 2002) continuously debate the merits of these two research paradigms. Some authors like Gray (2009), Easterby-Smith et al. (2004), and Wood (1999) have indicated that positivism and phenomenology have both advantages and disadvantages, and especially emphasised that they can be complementary (see appendix 3). They also suggest that the choice of research

methodology derives from the nature of the phenomena being studied and that there are a number of factors that determine the choice of research strategy. These include the extent of existing knowledge in the research area, the research question, the researcher's skills, time and available resources (Brownell and Trotman, 1988). Based on the phenomenological paradigm, the researcher has considered strengths and weaknesses discussed by several authors (Easterby-Smith et al., 2004; Wood, 1999; Brownell and Trotman, 1988). For example, five strengths of the phenomenological paradigm have helped the researcher to achieve the aims of this research: to look at processes of change in the participating hotel group's EMPs over time; to understand participants' meanings; to adjust ideas as they change during the research process; to provide a way of gathering data which is natural rather than artificial; and finally, the contribution of this study to providing more information and knowledge to control and monitor EMPs to reduce costs. On the other hand, this research has considered some weaknesses of the phenomenological paradigm. For example, the data collection took almost two years to complete and cost around two thousand pounds in transportation and accommodation.

3.1.2 The technical aspect (Qualitative and Quantitative Approaches)

On the technical side of the research design, the quantitative approach and the qualitative approach are the most important analytic practices in presentation of scientific research. Many researchers have discussed the distinctions between quantitative and qualitative research methods in various aspects (Teddlie and Tashakkori, 2009; Silverman, 2005; Easterby-Smith et al., 2004; Creswell, 2003; and Smith, 1993). For instance, Smith (1983) stated that the quantitative paradigm is the traditional, the positivist, or the experimental; and the qualitative paradigm is the interpretive. The main differences in assumptions between quantitative and qualitative paradigms (see appendix 4) have been summarised by various authors (e.g. Saunder et al., 2007; Flick, 2002; and Lincoln and Guba, 1988). The assumptions given about each paradigm are based on ontological, epistemological, axiological, rhetorical, and methodological approaches. It is important to understand these assumptions because they have provided direction

for the design of all phases of this research.

According to the ontological assumption, reality is regarded as subjective, and according to the epistemological assumption, the researcher is interacting with that being researched instead of being independent from it. Therefore, following the axiological assumption, this research using a qualitative approach is seen to be value-laden and biased, which could be regarded as a limitation. According to rhetorical assumptions, this study is characterised by its informal personal voice, accepted qualitative words, and evolving decisions. In terms of methodology, this research follows qualitative methodology where both deductive and inductive logics prevail. Data collected for this study emerged from participants, rather than only being identified a priori by literature. This emergence provides rich "context-bound" information leading to patterns that help explain how hotels manage and control their EMPs (Creswell, 2003; and Flick, 2002). The methodology of this research is justified throughout this chapter, and further details are found in the later sections.

3.1.3 Political aspect

As regards the political aspect, according to Easterby-Smith et al., the views held by the individual researcher are clearly an important factor in the choice of research design and research methods. In addition, the focus of the research emerges from the process of negotiation between the three elements – researcher, collaborating participants and research subject. The relationship between researcher, participants and subject is complex and difficult to develop when the researcher has not had previous contact with the research subject, in this case the participating hotel group. The cooperation of the collaborating participants is a critical factor in collecting data. Fortunately, the participating hotel group and all participants showed positive attitudes and cooperated to provide data needed for this study.

Apart from the previous considerations, the research question is also a main factor influencing the research design and methods chosen. Campbell et al. (2004)

concluded that "the selection of innovative research questions is not a single act or decision and good research is a process, an attitude, and a way of thinking and is accomplished by researchers who are motivated to do significant research, who are willing to pay the cost in terms of time or effort". Hence, the formulation of the research questions was not an easy task to undertake at the beginning of the research process and it took considerable time to develop the research question that would define the research topic. In addition, the participating hotel group also influenced the formulation of research questions due to the availability of data.

3.2 Choosing research approaches

Different research approaches generate different data that help the researcher to answer research questions, so the decision on what research approach to use is particularly crucial to research design. There are various definitions of qualitative research. For example, Hesse-Biber and Leavy (2006) indicated, the use of the qualitative research approach with exploration is appropriate when the researcher has relatively little knowledge about the subject under investigation. Moreover, Decrop (2006) and Lewis (2003) noted that qualitative research is less concerned with the analysis of macro-processes and more concerned with how individuals interpret their world; hence it is interpretive in nature. Thus, a qualitative exploratory approach is used in this study because an exploratory approach is particularly useful to help the researcher develop a deeper understanding of the effect of EMPs on hotel operating costs (Robson, 2002). Several authors have defined exploration, which may help in understanding its meaning. Vogt (1999) has defined exploratory research as:

"A broad-ranging, purposive, systematic, pre-arranged undertaking designed to maximize the discovery of generalizations leading to description and understanding of an area of social or psychological life" (p. 105)

The exploratory research approach is preferred for this study because it is believed that an exploratory study could help to find out what is happening by asking questions and assessing EMPs in a new light (Robson, 2002). This is

particularly so since the relationship between EMPs and hotel operating costs is a matter of great debate and little has been explained about what is going on in a theoretical manner. Thus, according to Saunder et al. (2007), exploratory research is particularly useful while the researcher is clarifying their understanding of a debate, for example that over EMPs in hotel organisations, where little is known about what is there or what is going on. It also helps to "get under the skin" of an organisation to find out what is really happening, as the researcher believes that informal reality can only be perceived from the inside. An exploratory study can use different research approaches to discover new sights or phenomena; it all depends on the research questions: "who", "what", "where", "how" and "why". Most of the research questions in this study are developed from what, why and how questions, which are very helpful for exploratory study aimed at gaining new insights into the studied subject. For example, the 'what' question has been used to explore relevant documents in relation to the planning of EM programmes. The 'why' question has been used to explore the perceptions of hotel managers and financial controllers at different levels. The 'how' question is utilized to explore the control system of EMPs, and also the effect of EMPs on operating costs. As a result, each of the exploratory questions has helped the researcher to maximise the discovery of new phenomena and new insights into EMPs using three source areas: documents, archival records, and interviews. In short, these qualitative methods focus primarily on the evidence of what people say and what they do, and this will enable the researcher to understand the meaning of the hotel's EMPs (Hesse-Biber and Leavy, 2006).

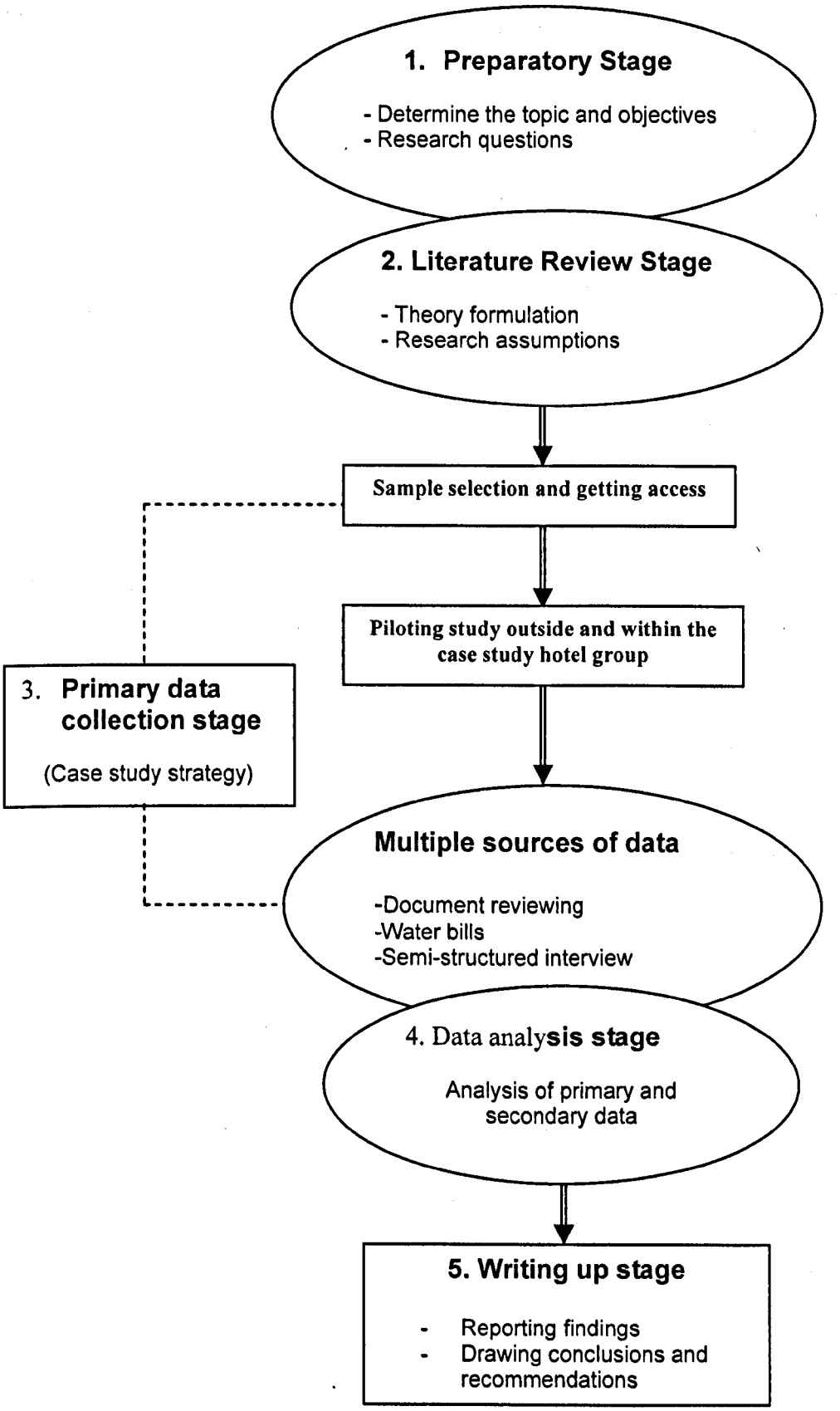
Moreover, Saunder et al. (2007) and Snape and Spencer (2003) stated that qualitative assumptions involve the inductive process that helps the researcher to gather detailed information to form patterns out of observing the world. However, Veal (1997) argued that, in practice, no researcher's work is purely inductive, because researchers always start their fieldwork with some ideas. In fact, there is an interplay between the induction and deduction processes in this study (Strauss and Corbin, 1998) because the evaluation of extant literature formed some ideas which have been used as guidance in collecting primary data. As Miles and Huberman (2002) have indicated, the research that might result could be poorly focused without some kind of underlying theory or ideas; therefore, some

preliminary ideas were developed for this study to guide what this research should investigate in the fieldwork, and where the causes of problems might lie. Although many authors and researchers tend to view qualitative research as a predominantly inductive paradigm, both deduction and induction are involved at different stages of the qualitative process (Snape and Spencer, 2003). At the preparatory and literature review stages, a deductive approach has been used to review extant literature about both general and hotel businesses in order to obtain ideas and knowledge about how Organisations control and monitor EMPs to improve financial performance. Then, an inductive approach was used during data collection because those ideas and thoughts were modified in line with findings that eventually helped the researcher to get the right information about EMPs.

3.3 Research design of this study

This research is designed as an action plan aimed at answering research questions, and the systematic framework of this research design has guided the researcher through the processes of collecting, analyzing, and interpreting the data in order to draw inferences concerning effects of EMPs on financial performance. In order to arrive at a suitable methodological strategy for this study, the researcher engaged in a process of constant reflection. As the research progressed, the methodology adopted had to be constantly reviewed and refined. According to Yin's suggestion (1994), this research process is divided into five stages: preparatory, literature review, data collection, data analysis, and write up (see figure 3.1). Although the research process was designed to be done step by step in separate activities, it is important to note that not only the preparatory and literature review stages overlapped, but also the stages of data collection and data analysis. This follows Miles and Huberman's (2002) contention that the relationship between data collection and data analysis activities is likely to be an interactive and cyclical process.

Figure 3.1: The design of this study



3.3.1 Stage 1: Preparatory

At the preparatory stage the initial research interest encompassed broad areas of environmental issues and the researcher had clarified EM by narrowing down the EMPs to manageable and feasible constraints in relation to hotel operating costs. It was important to define research problems in terms of developing research questions because it involved a preliminary investigation of background information to familiarize the researcher with the EM area (Zikmund, 2000). Following Porter's win-win concept of EMPs, one central research question with three sub research questions was developed to explore different aspects of EMPs (see the introduction chapter for more details). The central research question was developed based on the research debate over the impact of EMPs on operating costs. This central question is related to the choice of research strategy, the case study strategy, which helps the researcher to conduct an in-depth investigation into EMPs and identify significant factors in achieving the best EMPs. Three associated sub questions with a mix of "what" and "how" questions were then developed to explore the process of EMPs. Besides, it is important to note that the qualitative research questions were continually reviewed and reformulated during the study in order to find the right data.

Robson (2002) indicated that good research questions should be linked to purpose, so four research objectives were developed in order to explain the purpose of the research in measurable terms and define what the research should accomplish. The first objective was to review relevant literature on EMPs with particular reference to the financial perspective. The second objective was to collect documents and archival records to acquire information on how EMPs affect hotel operating costs. The third objective was to interview hotel managers at the head office level, regional level, and hotel level to look at how they perceive EM and manage EMPs. Finally, the fourth objective was to develop a holistic EM model to manage and control EMPs more successfully in hotel organisations. As a result, the formulation of research questions and objectives has provided a clear direction for the reviewing of extant literature.

3.3.2 Stage 2: Literature review

The purpose of the literature review is to ensure that no important variable is ignored that has in the past been found to have an impact on improving environmental performance. Veal (1997) has introduced a number of approaches with different purposes to review relevant literature (see table 3.1). This study has used the exploratory approach to conduct a literature review that helped to discover existing research which might throw light on specific research questions or on EMPs in terms of financial issues. This was done through:

- Reviewing environmental issues in general and the hotel industry in particular;
- Reviewing industry-specific EMPs with particular attention to hotel resource saving appliances in order to identify perceived benefits and problems;
- Evaluating the concept of win-win solutions and several EM models and frameworks in order to get an insight into relevant previous research and trends that have emerged;
- Reviewing the accounting system and related environmental issues in order to get a better understanding of how hotel Organisations control EMPs in their accounting systems;
- Having discussions with people from the hotel industry and from academia in order to obtain an understanding of the relevant topics and concepts that would help to clarify the research focus as well as to identify the possible relevant research questions.

At the early stage of the literature review, the researcher followed Hart's eight questions to help increase understanding and knowledge of EM (Hart, 2005). The first question is, "what are the key sources?" The literature review is the documentation of a comprehensive review of the published and unpublished work from secondary data sources in the area of links between EMPs and their financial implications. Various sources such as textbooks, journals, on-line data, current relevant research and completed theses were carefully investigated in order to formulate the research aim, objectives, and questions. The second question was what the major issues and debates about the topic were. This study began with the great debate about the effect of EMPs on business costs. One group of

authors claims that EMPs can benefit businesses not only by cutting down costs, but also by increasing reputation. However, another group of authors argues that EMPs add an extra cost to businesses. Therefore, this study is based on the debate between these two groups of authors on the issues of EMPs. The third question was what the political standpoints are. The researcher's political standpoint tends to be in line with the one that businesses can be benefited by implementing EM programmes. This is followed by the fourth question, of what the key theories, concepts and ideas are.

Table 3.1: Different approaches to conducting a literature review

Type of Literature review	*Description*
Inclusive	Seeks to identify everything that has been written on a particular topic
Inclusive/evaluative	Takes the inclusive approach a stage further by providing a commentary on the literature in terms of its coverage and its contribution to knowledge and understanding of the topic
Exploratory	Seeks to discover existing research which might throw light on a specific research question or issue
Instrumental	The literature is used as a source of suitable ideas on how the research might be tackled by identifying a useful methodology for the project in hand
Content analysis/hermeneutics	Involves detailed analysis of the contents of a certain body of literature or other documentary source

Source: adapted from Veal, (1997)

Based on Porter's concept, EM is a win-win solution for both business and the environment; and Elkington's win-win-win concept has been evaluated to support and extend Porter's concept. Pursuing the fifth question, this study evaluated a range of EMSs and stakeholder influences. The sixth question tackled structured and organized knowledge on EMPs to ensure that the researcher formed an interesting literature review and developed a research framework. The seventh

question led the researcher to review several questions and problems which had been addressed in previous studies. Consequently, one central question and three associated sub-questions for this study were formulated. The last question was related to methodological issues – which the researcher believes affect every stage of the research process.

The literature review in this study has served several purposes. Firstly, a literature review locates the research within the context of the published knowledge that already exists about the EMPs being investigated. Also, the results of previous studies were closely evaluated to give the researcher a basis for the design and direction of this research. This is regarded as crucial for understanding the roots of any piece of research (Denscombe, 2003). Secondly, after a careful and considered evaluation of previous studies and existing knowledge, this study furthers the ongoing process of filling in the gaps in the debate over the value of using EMPs to further environmental performance, as well as of extending prior studies of EMPs (Marshall and Rossman, 1989). Thirdly, reviewing the literature helped the researcher to develop a framework for establishing the aim, objectives and research questions of the study, as well as a benchmark for comparing the results of the study with other findings (Miller, 1991). In sum, as Lewis (2003) has indicated, the review of extant literature helps the researcher to understand how a study can be informed by and build on existing knowledge, ideas, and tentative theories.

3.3.3 Stage 3: Fieldwork

This stage investigates EMPs in the real world, in which environment the researcher senses that certain changes are occurring and some new behaviour, attitudes, and feelings towards EMPs are surfacing. There were three steps in this stage. The first step was to choose the research strategy. According to the research questions and interpretivism, the case study research strategy was preferred for this study. As Berry and Otley (2004) indicated, a case study research strategy helps to develop theoretical insights when existing theories are not adequate and complete in the area under study. In the second step, it explains

how the sample was selected and how access was gained to the participating hotel group. In the third step, it discusses the justifications for collecting primary data using documents, archival records, and interviews.

➢ Designing a case study research strategy

It was thought that the case study would provide the opportunity to generate new theoretical insights into the effects EMPs might have upon an Organisation. As Robson (2002) indicated, a case study is a strategy for conducting research which involves an empirical investigation of a specific phenomenon within its real life context, using mixed sources, e.g. documents, archival records, and interviews. Burns (2000) highlights one distinct feature of the case study, which makes it particularly suitable for the purposes of this research. This is that it focuses on individual actors, or groups of actors, and seeks to understand their expectations and perception of issues. Hence, case studies tend to portray the participants' thoughts, feelings, and experiences about a situation (Lewis, 2003; Gummesson, 2000).

However, a frequent criticism of the case study strategy is that its dependence on a single case renders it incapable of providing a generalizing conclusion (Tellis, 1997). Yin (2009) convincingly argued that the relative size of the sample, whether 2, 10, or 100 cases are used, does not transform a multiple case into a macroscopic study. He then noted that even a single case could be considered acceptable when the goal of the study is established with parameters that can be applied to all research that in turn meets set research objectives or answers the research questions. According to Beeton (2005), in case studies the intention of this study is not to generalize in the statistical sense but rather in the theoretical sense where the findings can be generalized to theories. Therefore, the generalization of the results of this study is made in terms of EM theory and not of populations. Multiple embedded cases strengthen the results by replicating the "pattern-matching", thus increasing confidence in the robustness of the theory (Yin, 2009). Moreover, this study has collected both quantitative and qualitative

data and has gone beyond the quantitative statistical results that explained the conditions from the perspective of the participants.

It is vital to realise that data collection for case studies can rely on several sources of evidence, such as documentation, archival records, interviews, observations, participant-observation, and physical artefacts. For this study, the primary data was collected from mixed sources of evidence in a corroboratory mode, in order to produce more convincing and accurate facts. This combination of document sources, archival sources, and interviews, as Patton (1990) indicated, can be used to validate and cross check findings. Also, Yin (2009) suggested three principles that can maximize the benefits from mixed sources of evidence. Firstly, a broader range of attitudes and behaviour can be addressed by collecting mixed sources of evidence in a case study. Secondly, organizing and documenting the data collected can create a case study database that allows other researchers to review the evidence directly and not be limited to the written reports. This way of organizing the case study database obviously increases the reliability of the entire case study. The final principle is to maintain a chain of evidence that, in turn, can increase the reliability of the information in the case study. In addition, Yin has summarized a list of sources and considered strengths and weaknesses of documentation, archival records, interviews, direct observation, participant observation, and physical artefacts (see Appendix 5). In summary, the most important advantage of utilising mixed sources of evidence is the development of converging lines of inquiry.

- **Sample selection and gaining access**

A case study was undertaken on an Irish UK hotel group, which owns hotels in Ireland, the United Kingdom, and America. This sample is not intended to be statistically representative; instead, the characteristics of the sample hotel group were used as the basis of selection. For this study, a hotel group with intention to implement EM programmes was preferred. As Patton (2002) has indicated, sample units may be chosen because of their particular characteristics: this is called purposive sampling. There are a range of different approaches to purposive

sampling, which are designed to yield different types of sample composition, depending on the aim or purpose of the research. This study has tended to use critical case sampling in which cases were chosen on the basis that they were willing to implement EM programmes in the delivery of their operation processes. With this interest in mind, the case study hotel group, being willing to improve its EM programmes, was a preferred sample for this study, considering the research aim. Patton views this approach as particularly valuable because it helps to draw attention to particular features of a process and can thus highlight the impact of the research. Within the case study hotel group, nine UK based hotel properties (one is the pilot hotel) were selected and they were categorised into three and four star hotels with similar characteristics in terms of facilities and background. The reason for choosing a single case study embedded in nine hotels located in the UK is to strengthen analytical generalizations through literal replication of the evidence.

Gaining access is an important part of the research process. As Connell and Lowe (1997) pointed out, access restrictions to management research could limit opportunities for fieldwork. Thus, it is difficult to approach an organisation where one has had no prior contact and seeks to operate in the role of external researcher. The process of gaining physical access to the case study hotel group took around six months. Initial access was obtained through IH, where the second supervisor worked as consultant for the hospitable climate programme. Then a brief presentation is given to several consultants who were advising hotels about EM programmes in order to get contact with hotels who were implementing EM programmes. After about two months the case study hotel group, which is a member of IH and wishes to improve energy and water efficiency, expressed interest in participating in the project. The initial access was obtained after giving a presentation to the environmental director of the case study hotel group. After a period of approximately three weeks in which the environmental director had time to consider the offer, a follow-up telephone call was made. After gaining permission from the company's environmental director, eight hotels in the UK were chosen, considering factors of availability of data, time, and budget.

In order to avoid the problem of false starts, and an associated feeling of

disappointment, as a result of overruling at a higher level in the organisation, the presentation was done at each of the selected hotels to allow hotel managers to freely make the decision to participate in this study. After presentations had taken place in each hotel and managers had agreed to take part in this project, follow-up telephone calls and e-mails were made in order to confirm the procedures and finalize the arrangements with those who were willing to participate in the interview process. In addition, each participant received a plan, which included what kind of data was needed, what techniques it was planned to use, and which dates the researcher proposed (see appendix 6). Of course, the proposed dates changed according to each participant's availability and each visit was confirmed before the researcher took any action. Also, each participating hotel's general manager and financial controller were sent a participant information sheet that mainly discussed the ethical issues involved (see appendix 7).

To protect each hotel's and interviewee's identity, a promise of confidentiality was made. Each hotel's identity was concealed by renaming them H '1', '2, '3', and '4' respectively, and the identity of each participant was protected by referring to them in such a way as, "GM from H1 and financial controller from H1", for example. This promise put managers and financial controllers at ease which helped in gaining access to sensitive information, and served to ensure that no information would be revealed to competitors. In appreciation of their participation in this study, complimentary copies of the study's results and findings were made available to the company. Moreover, a promise was made to maintain the confidentiality of the stored data in addition to the anonymity of the organisation and individual participants.

➢ Methods of data collection

According to the research questions as well as the structure and timing of research, this study employs mixed methods of data collection, using documents, archival records and semi-structured interviews. Accoring to Teddlie and Tashakkori (2009), the research questions were initially answered using individual sources of evidence, and, subsequently, all the evidence (primary data and

existing literature) were put together in order to achieve the research aim. Before using any method to collect data, pilot studies were conducted in order to confirm the research methods and interview questions.

- **Pilot case study**

There were two purposes of conducting pilot studies: to confirm the research design, and to modify interview questions (see appendix 8). Firstly, one international hotel group was piloted to check the feasibility of the research design; that in turn helped the researcher to throw up some of the inevitable problems of converting the design into reality (Robson, 2003). For example, the piloted hotel group's annual reports (2000 – 2005) were examined to see whether they had integrated environmental issues into their business objectives; and environmental documents (2000 –2005) were evaluated to see how they planned and managed their EM programmes. Additionally, interview questions were modified according to experienced managers' advice (environmental director at the head office and financial controller). The verification of interview questions was extremely helpful to collecting high quality data from company documents, financial data, and semi-structured interviews. Although piloting with the international hotel group helped the researcher to modify the process and structure of the case study, another pilot study was also carried out within the participating hotel group to justify the interview questions as being appropriate for the company's style and culture. Some outcomes of the pilot studies were developed, and table 3.2 summarises the purposes and outcomes of these studies.

Overall, the fundamental ideas and principles of this research did not change but two refinements were developed during the pilot studies. The first refinement concerned the research aim, as laid out in the original MPhil/PhD proposal document. It was subject to refinement as a result of the ongoing development of the research project. The original aim of the research was to examine the relationship between environmental management practices and operating costs in hotel Organisations. During the project, however, the focus on the broad range of EM programmes was refined further by focusing down on water management.

This tighter focus is due to an output from the pilot study. The pilot study illustrated that data about energy were not easily comparable as some hotels record them in financial terms and other hotels record them in units of consumption. Also, the pilot study revealed that the participating hotel company had a wide range of contractors to deal with waste and there was not a fair basis for comparison across all hotels in the group. The water issue became, therefore, the logical one to focus on because: 1) consumption is directly related to cost; 2) information about consumption in standard units is easily available in a way understandable by accountants and; 3) the accounting procedures for tracking water costs are the same as those for energy and waste, and so the same general principles apply.

Table 3.2: Purposes and outcomes of the pilot case study

	Outside the participating hotel group	*Within the participating hotel group*
Purposes	An international hotel group was piloted to verify the research design	A UK-based hotel was piloted to confirm the research design and verify the interview questions
Outcomes	A case study with three methods of primary data collection - documents, archival records, and interviews - was piloted to confirm that the case study would be this research's appropriate strategy. In addition, interview questions were piloted with an environmental director and financial controller in order to gain some insight into business terms.	A UK based hotel from the participating hotel group was piloted to confirm that the three methods of data collection were suitable techniques for collecting the "right" data to achieve the research aim. In addition, interview questions were piloted in attempt to word questions appropriately for the participating hotels to understand.

The second refinement concerns the research method. In the early stage of the research process, not much literature was found on the research topic, especially in the hotel industry. Therefore, it was decided to carry out a small sample survey before conducting the case study in order to reinforce the research assumptions. However, after reviewing existing literature more extensively and in depth in the later stage of the literature review, it was found that there was, in fact, sufficient

literature to formulate research questions and objectives. Moreover, the pilot study had confirmed the research assumptions and therefore conducting a survey to do so was not needed.

- **Documentation**

Systematic research investigations on documents related to EM were important in the data collection plan, because this would help the researcher to understand the background of the participating hotel organisation. This study has collected three types of documents, which have played an explicit role in the data collection. The first type was e-mails and letters, which are considered to be the communication between researcher and informants. The formal letters and research proposal actually assisted the researcher in developing a good relationship with all informants prior to the physical visits. Also, the e-mail discussions enabled the researcher to obtain the language and words of participants and these written documents saved a lot of time when the researcher was later transcribing interviews (Creswell, 2003). The second type of documents was articles and newspaper information about the participating hotel group from the internet, which were useful for making inferences about the study situation, as those documents were treated only as clues worthy of further investigation rather than as definitive findings. Those documents were also helpful in verifying the correct spelling and titles or names of organisations mentioned in an interview, since the participating hotel group had merged with another hotel group.

As Yin (2009) indicated, it is important to review every document and understand that it was written for some specific purpose and some specific audience other than that which relates to the present case study. The third type of documents comprised company documents, annual reports, and environment related documents, which provided specific details to corroborate or dispute evidence from other sources. Part of the documentary evidence was contradictory as opposed to the supporting evidence from interviews, and this helped the researcher to inquire further into the topic and get new insights from other perspectives.

◆ Archival records

The following sources were investigated from:

- Organisational records of water consumption and costs at the head office level and hotel level;
- Water consumption and costs from the UK regional financial controllers (these were compared);
- Water bills from the years 2002 and 2004 from eight hotel properties in the UK;
- Internal energy and water surveys from external experts. These were restricted to those used for commercial purposes;
- The monthly number of sleeper nights, total available rooms, and room occupancy for the years 2002 and 2004 from eight hotel properties;
- A set of records of investments in water saving appliances from the head office.

In this study, two kinds of information were collected from archival records: numerical data and non-numeric data. The numerical data with quantitative information and the non-numeric data with qualitative information were both relevant for this study. For instance, the water bills for the years 2002 and 2004 were collected in order to identify whether any savings had been made and check the accuracy of the water costs. Moreover, the water consumption and costs were compared against available rooms, the number of rooms sold, and the number of guests to see any differences among three groups of performance indicators and also to benchmark performance. The archival records were highly quantitative, but numerical data alone was not automatically considered as a sign of accuracy. Therefore, the qualitative data related to water consumption and costs was evaluated as well as semi-structured interviews being conducted, in order for more value, explanation, and accuracy to be given to the results.

◆ Semi-structured interviews

Semi-structured interviews were employed to get the valuable data from hotel managers and financial controllers at the head office, regional office and individual

hotel levels, providing supplementary information to the documents and archival records (Miller and Glassner, 2004). One advantage of considering semi-structured interviews as a method of collecting data is that they are flexible (Hesse-Biber and Leavy, 2006). Kvale's (1996) seven stages of interview, being thematizing, designing, interviewing, transcribing, analyzing, verifying, and reporting, were used to guide the whole interview process (see table 3.3). These seven activities provided assistance to the researcher as follows:

- Thematizing helps the researcher to formulate the purpose of the investigation and describe the concept of EMPs to be investigated before interviews start;
- 'Designing' means the study was planned to be undertaken in order to obtain the intended knowledge. This activity is similar to an action plan for a researcher and it helps to implement research systematically;
- Interviewing, means that interviews are conducted based on an interview guide with a set of questions, and with a reflective approach to the knowledge sought and interpersonal relations in the interview situation;
- Transcribing helped the researcher to prepare the interview materials for analysis, which commonly included transcription from oral speech to written text;
- Analyzing helped the researcher to analyze interview data with regard to the nature of the interview material and the purpose of the investigation;
- Verifying assisted the researcher to ascertain the generalisability, reliability, and validity of the interview findings (these issues are discussed in a later section);
- Reporting is the way of communicating the findings of interviews and it takes the ethical aspects of the investigation into consideration.

Table 3.3: The guidance for the whole interview process

Thematizing	Formulate the interview purpose
Designing	Formulate the intended outcomes
Interviewing	Develop interview schedules for conducting interviews
Transcribing	Transcribe all interviews into written text
Analyzing	Analyze the written text from interviews
Verifying	Verify the reliability and validity
Reporting	Make a final report, communicating this project to readers

This study categorized into four steps towards conducting interviews as following:

Step 1: thematizing and designing interview schedules

The interview schedules were developed according to the outcomes of the literature review and discussions with supervisors. The interview schedules were then refined from a financial perspective after piloting with an environmental director and a group of twelve financial controllers of an international hotel group. Finally, the interview schedules were modified in more technical terms after piloting with one UK based hotel within the participating hotel group. The interview questions were designed in a shorter form, as Kavale (1996) indicated that interview questions should be brief and simple, because the shorter the interviewer's questions, the longer the subjects' answers. The interview questions were designed for three levels of participant interviewees: environmental directors at head office, hotel general managers, and financial controllers at both the regional and hotel levels. The fundamental interview questions are similar, but some specific questions were developed according to interviewees' appointed tasks and knowledge. There were three forms of interview schedules, designed in four parts. Basically the first part of the three interview schedules is the same. This involved questions about the interviewees' background, experiences, and education. The second part was designed to find out about the interviewees' perceptions, commitment to, and awareness of EM programmes. The third part was mostly developed specifically for the environmental director at head office and the hotel general manager. However, an alternative third part was designed for financial controllers and concentrated on the financial systems which assist financial controllers to record, track and evaluate financial information, and also on specific reports made to communicate with hotel general managers. Finally, the last part of the three interview schedules was designed differently according to the interviewees' tasks and authorities. For example, the last part of the head office interview was related to decisions on environmental management systems used and environmental accounting or reports produced. In contrast, the last part of the interview schedule for hotel general managers focused on the management of the hotel's water efficiency, and for financial controllers it tried to find out opportunities to improve water efficiency.

Step 2: interviewing

In total 21 informants participated in the interviews: one environmental director from head office, one UK regional environmental director (purchasing manager), one UK regional financial controller, nine hotel general managers, and nine hotel financial controllers (see table 3.4). In order to allow concentration on the topic and the dynamics of the interview, the whole interviews were recorded. Two types of tape recorders - cassette tape recorder and digital recorder - were used in order to prevent technical faults. Field notes were also used to record some of the body language of interviewees, but eye contact was the most useful way to get interviewees talking. Each interviewee was again told about the research purpose and was asked for permission to record the whole conversation.

Step 3: transcribing and analyzing

Each interview was transcribed from oral into written text, and table 3.4 shows the time consumed by the 21 interviews. Apart from the interviews with the environmental directors at the head office and regional office, each interview took between eight to ten hours. The first two transcripts took longer as it was necessary to get used to the voices and terms used in the interviews, and then the subsequent transcripts took less time than expected. Analyzing them took place after each transcript was completed in order to identify key words and themes in each interview. An overall pattern emerged after the interviews with both general managers and financial controllers in the six hotels.

Step 4: verifying and reporting

The researcher has considered some weaknesses of using the interview method, and also shown that ethical issues could affect the quality of research because participants may be afraid to give precise answers. Thus, this research was conducted with great consideration for ethical issues to help obtain better quality information (Robson, 2002; Kvale, 1996) and reduce response bias due to the reflexivity of informants.

Table 3.4: The location and duration of interviews

Interviewee	*Location*	*Duration*	*Time consumed*
Head office ED	Office, including a walk around hotel property	Five hours Tapes and digital recorders; field notes	Fifty hours
Regional ED	Meeting room, including visit to a guest room	Two hours Digital recorders and field notes	Twenty three hours
Regional FC	Financial office	Fifty minutes Tapes and digital recorders	Ten hours
H1 GM	Office	Forty five minutes Tapes and digital recorders;	Nine hours
H1 FC	Office, including visit to back office	Two hours Tapes and digital recorders; field notes	Twenty hours
H2 GM	Office	Forty two minutes Tapes and digital recorders	Eight hours
H2 FC	Meeting room	Forty minutes Tapes and digital recorders; field notes	Eight hours
H3 GM	Meeting room	Thirty eight minutes Tapes and digital recorders	Eight hours
H3 FC	Meeting room	Fifty three minutes Tapes and digital recorders	Eight hours
H4 GM	Meeting room	Forty seven minutes Tapes and digital recorders; field notes	Nine hours
H4 FC	Meeting room	Forty nine minutes Tape recorders	Nine hours
H5 GM	Office	Fifty five minutes Digital recorders; field notes	Ten hours
H5 FC	Office	Fifty three minutes Tapes and digital recorders; field notes	Ten hours
H6 GM	Meeting room	Fifty four minutes Digital recorders; field notes	Nine hours
H6 FC	Meeting room	Forty five minutes Digital recorders; field notes	Nine hours
H7 GM	Office	Fifty two minutes digital recorders; field notes	Nine hours
H7 FC	Meeting room	Thirty eight minutes Digital recorders; field notes	Nine and a half hours
H8 GM	Lounge	Forty three minutes Digital recorders; field notes	Nine hours
H8 FC	Lounge	Forty five minutes Digital recorders; field notes	Nine hours

The researcher was required to submit an ethical form to the university's research ethics committee, and the collection of data from the participating hotel group began when the researcher met the university research ethics committee's requirements. Ethical guidelines for informed consent, confidentiality, and consequences were employed in this study. Each participant was informed, through a briefing and debriefing, about the purpose and the procedures of the study. A written agreement was signed by both participant and researcher thereby obtaining the informed consent of the participant to participate in the study. The written agreement included information about confidentiality and who would have access to the interview; the researcher's right to publish the findings of the study; and the participant's possible rights to see the transcription and the interpretations. Confidentiality in this research was ensured by agreeing to store private data under lock and key and identify the subjects that were not be reported without the participating hotel group's and participants' agreement. All participants were guaranteed that their interviews and financial data would be treated confidentially. In order to protect participants' privacy, fictitious names and sometimes changes in participants' characteristics would be used in the published results. The risk of harm to the participants has been minimised to the least degree possible; however, the consequences of participating in this study were addressed with respect to possible harm to the participants as well as the expected benefits of participating in the study (Kvale, 1996).

3.3.4 Stage 4: Data analysis

This stage consists of two main tasks: one is to present the research findings from the documents, archival records, and semi-structured interviews; another is to triangulate three sources of data and compare the main findings of the primary data against secondary data.

- **Presenting the research findings**

The purpose of presenting the relevant findings before going ahead to analysis is to see what implications the data might have for the issues, problems, or ideas

promoted in the research. The analysis of the findings used Gall et al's (1996) suggested method, interpretation analysis, which is a process for the close examination of data in order to identify key themes and patterns. As Gall et al. have indicated, the aim of interpretational analysis is to make case study based research as objective as possible. Although computer organisation of the data is recommended by several authors, the researcher still prefers to analyze data manually using considerable care and a step-by-step analytical manner.

- **Findings from documentation**

The first chapter of findings presents the relevant documents, which include company background and documents related to environmental issues at head office level, regional level and hotel level. An evaluation of documents at each level was conducted and the comparison between head office level, regional level and hotel level is illustrated as follows (figure 3.2).

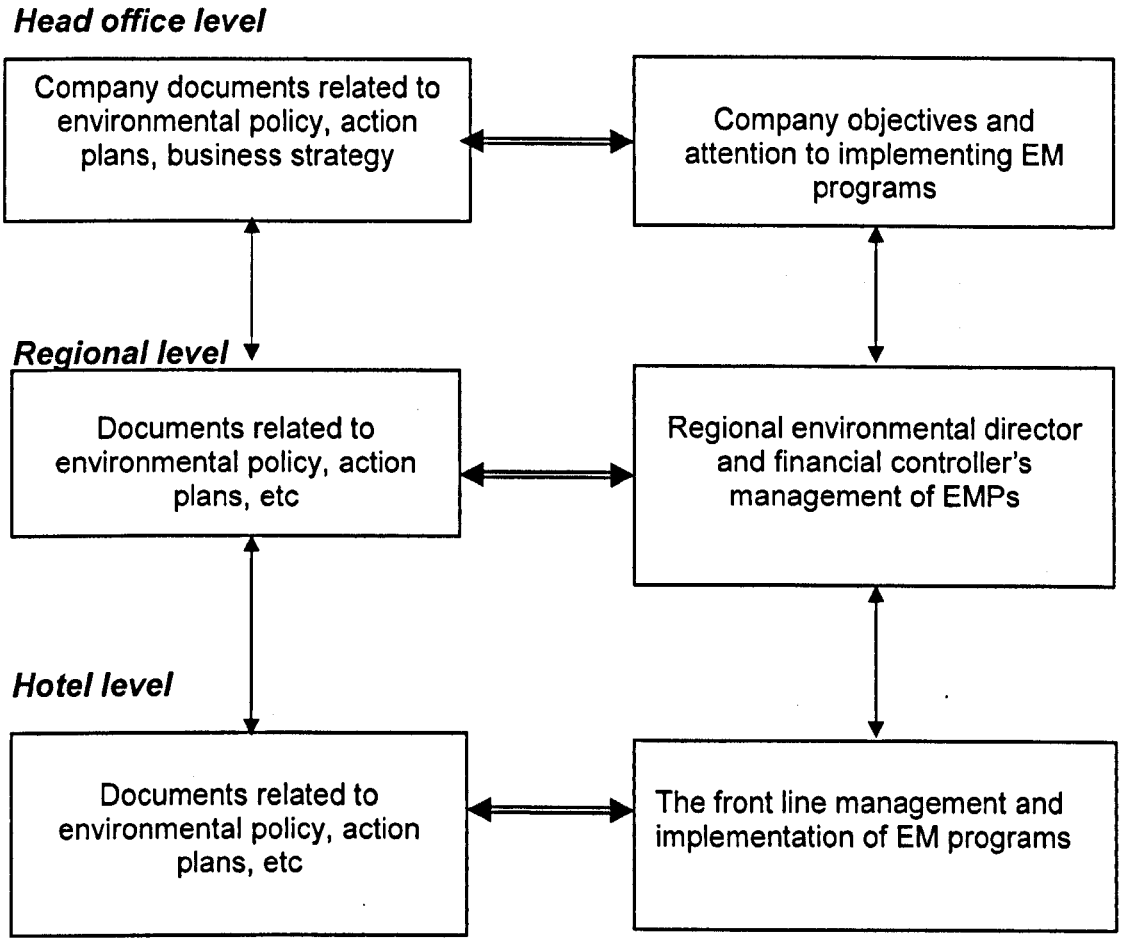
- **Findings from archival records**

The second chapter of findings presents the water bills and archival records of recording and monitoring processes related to water performance over the period of three years from 2002 to 2004. Monthly water consumptions and costs were recorded in the spreadsheet and analyzed against the numbers of total available rooms, rooms sold, and sleeper nights. In addition, water bills from different water suppliers were examined to see whether elements of the water bills affect water costs amongst the eight hotels. Then the water bills were used to compare the hotels' monthly recorded water consumption and costs to identify the true water costs and other factors (e.g. price) influencing accuracy. Moreover, several performance indicators were developed in order to view particular dimensions of performance, such as water usage and costs per day; water costs and usage per guest; and water costs and usage per occupied room.

Three external water benchmarks (see appendix 1) are used to assess whether the hotel properties are efficient or not: Thames Water, Green Hotelier, and water

benchmark from a competitor (Accor group). The results of the analysis of each hotel are illustrated in figure 3.3. Eight hotels fell into the category of efficiency and only one fell into the category of inefficiency. In the cross analysis of hotels, they were categorised into three and four star hotels and some water performance indicators were identified.

Figure 3.2: The comparison between head office level, regional level, and hotel level

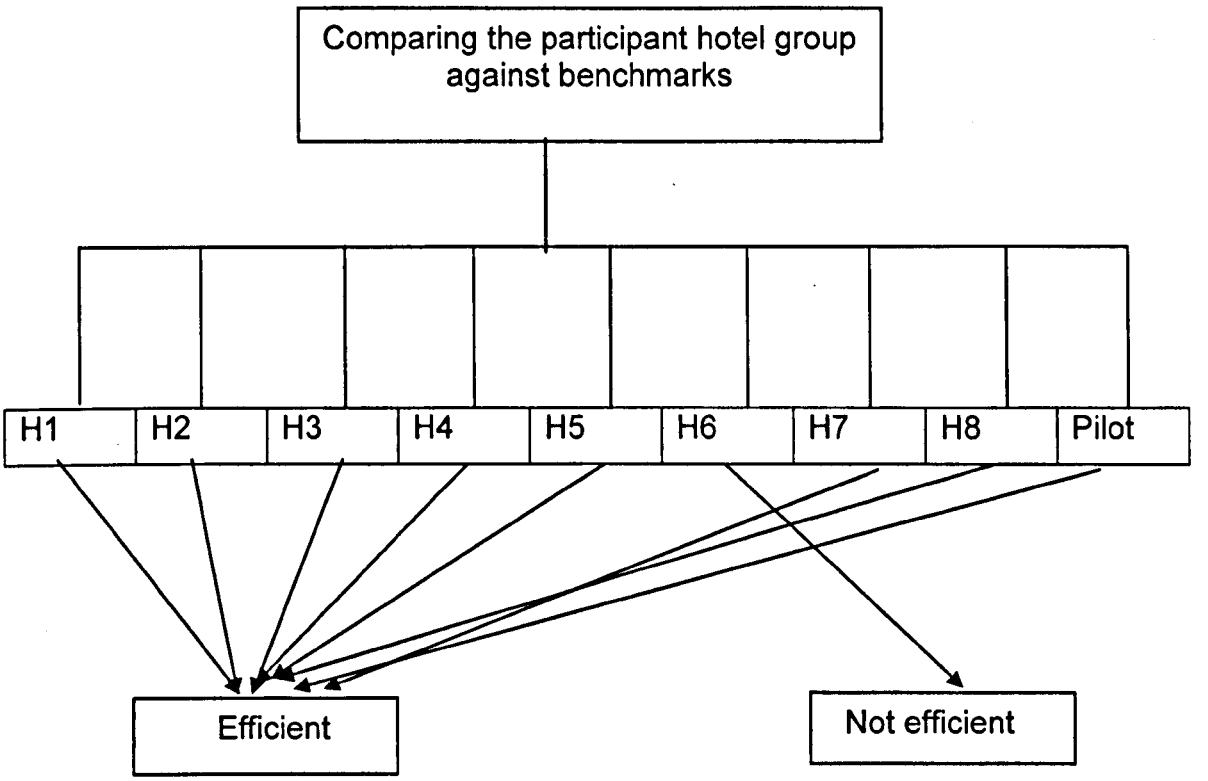


- **Findings from interviews**

The third chapter of findings presents the findings from interviewing the environmental director from head office, the UK regional environmental director and regional financial controller, nine hotel general managers and nine financial controllers. For this research project, the research findings from interviews were

initially presented around themes identified by coding at each level. Analysis between the three levels and two positions of managers and accountants was then undertaken. The themes identified are related to stakeholders, financial interests, the monitoring process, self-awareness about the environment, and company strategy.

Figures 3.3: Comparison with water benchmarks



The analysis of semi-structured interviews was carried out in order to develop a set of categories to be amalgamated by assigning tags or labels, and the categorized data was then coded according to the type of question. The main reason for using coding is because it can be considered for a range of approaches that help the organisation, the retrieval, and the interpretation of data. Moreover, some authors have described coding from other perspectives. According to Miles and Huberman's (1994) argument, coding is a process that enables the researcher to identify meaningful data and set the target for interpretation and the drawing of conclusions; they describe codes as:

"Tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study. Codes usually are attached to 'chunks' of varying size – words, phrases, sentences or whole paragraphs, connected or unconnected to a specific setting. They can take information of a straightforward category label or a more complex one (e.g. metaphor)." Miles and Huberman, (1994, p 56)

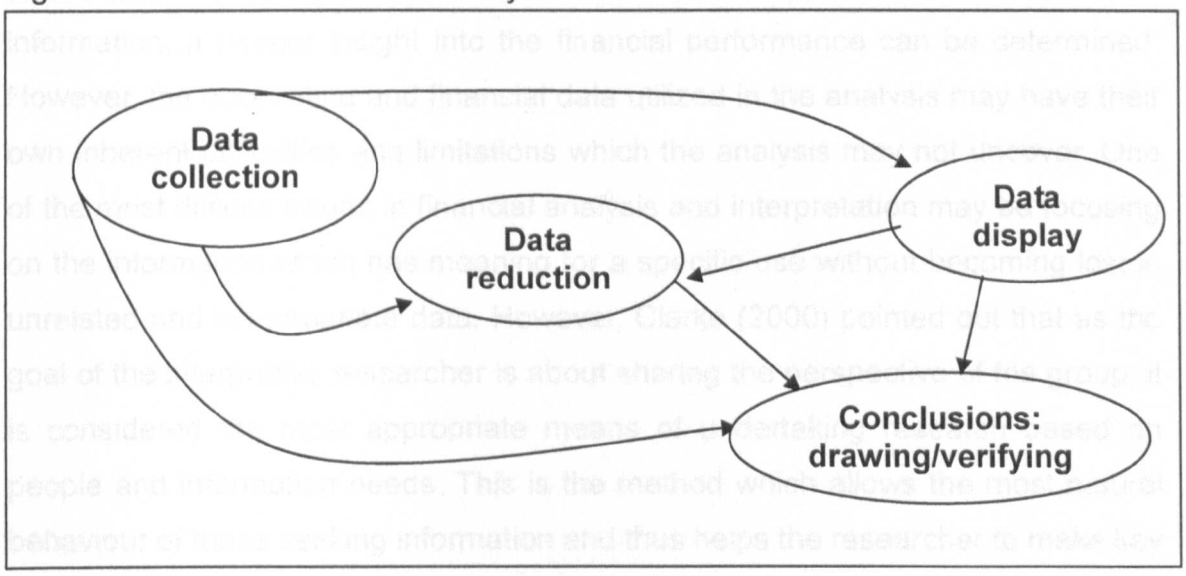
The next step is to code the segments and sort them into sub-categories. The analytic procedures that underpin coding procedures establish links between various segments by bringing those fragments of data together to create categories that are defined as having some common elements. Also, by coding these data, the researcher has simplified and reduced data to the segments relating to particular research questions, constructs or themes (Coffey and Atkinson, 1996). The primary data in interviews was extracted by attaching a number of coding categories based on the interview questions.

- **Triangulation analysis and comparisons between the primary data and secondary data**

Figure 3.4 illustrates how the sources of data were analyzed in three ways. The first way (1) is that environmentally related documents led directly to conclusions which were verified using existing literature. The second way (2) was to reduce data from interviews, documents, and water bills before reaching conclusions; and the third way (3) was to display the data from water bills before arriving at conclusions. Findings from each source of data were triangulated in order to identify the influential factors in EMPs. Figure 3.5 shows how various data were analyzed triangularly in order to identify the discrepancies between three sources of data. Triangulation analysis was used in order to check the integrity of, or extend inferences drawn from, the data as mixed sources were employed for collecting primary data (Travers, 2004). Denzin (1994) claims that triangulation analysis has been widely adopted and developed as a concept by qualitative researchers, as a means of investigating the convergence both of data and the conclusions derived from them. Moreover, Ritchie stated that it was one of the

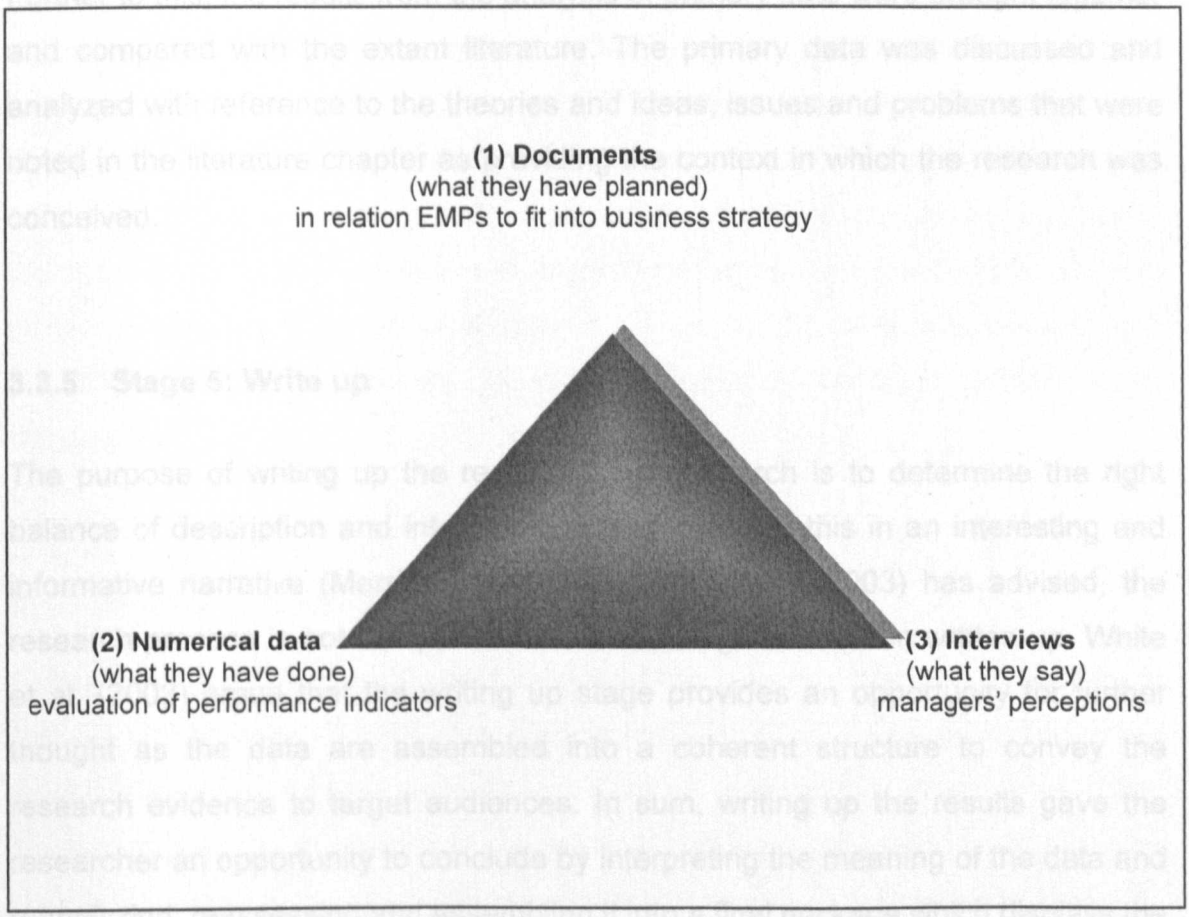
central ways of validating qualitative research evidence.

Figure 3.4: Data collection and analysis – an interactive model



Adapted from Miles and Huberman (1994)

Figure 3.5: Triangulation analysis of primary data



The analysis and interpretation of financial information in this study can be seen as the link between financial information and business decision-making processes toward EM. Therefore, by taking this analytical approach to the financial information, a deeper insight into the financial performance can be determined. However, the accounting and financial data utilized in the analysis may have their own inherent difficulties and limitations which the analysis may not uncover. One of the most difficult issues in financial analysis and interpretation may be focusing on the information which has meaning for a specific use without becoming lost in unrelated and inappropriate data. However, Clarke (2000) pointed out that as the goal of the interpretive researcher is about sharing the perspective of the group, it is considered the most appropriate means of undertaking research based on people and information needs. This is the method which allows the most natural behaviour of those seeking information and thus helps the researcher to make key decisions about information needs, information satisfaction and information fulfillment.

Further to this, the results from the analysis of primary data were brought together and compared with the extant literature. The primary data was discussed and analyzed with reference to the theories and ideas, issues and problems that were noted in the literature chapter as providing the context in which the research was conceived.

3.3.5 Stage 5: Write up

The purpose of writing up the results of this research is to determine the right balance of description and interpretation and integrate this in an interesting and informative narrative (Merriam, 2009). As Denscombe (2003) has advised, the research process is not completed until the findings have been written up. White et al. (2003) argue that the writing up stage provides an opportunity for further thought as the data are assembled into a coherent structure to convey the research evidence to target audiences. In sum, writing up the results gave the researcher an opportunity to conclude by interpreting the meaning of the data and reanalyzing, reassessing and assembling it into a final package which displays the

findings with an ordered and reflective commentary.

In general, writing up this study required explanations and conclusions to be generated from the data, but the depth and richness of the qualitative data presented considerable challenges. Therefore, it was decided that the writing up process would take the rich and detailed data that had been collected and present its key findings in three separate chapters. The discussion chapter then compared primary findings with secondary findings. This research employs Erickson's (1986) three suggested components in writing up findings: particular description, general description, and interpretative commentary. In the particular description section, the primary findings consisting of quotes from company documents (chapter four), numerical figures from water bills and archival records (chapter five), and interviews and field notes (chapter six) were presented. In the general description section, the findings from mixed sources of evidence were triangulated, which helped the researcher to see whether the vignettes derived from comments from informants were typical of the data as a whole, and also helped to relate the parts to the whole research picture. Then, in the interpretative commentary, the results of the primary findings were compared with the existing literature in order to provide a better understanding of how EMPs affect financial performance. This study also includes some additional chapters according to the general consensus on writing up. For example, chapter one was developed to explain the purpose of the research and chapter two was provided in order to present findings from previous research. The aim of chapter three was to describe how the research was done; and chapter eight discussed and analyzed the findings in order to reach conclusions.

3.4 Validity and Reliability

Before justifying the reliability and validity of the primary data, it is necessary to define the meanings of the terms. Hammersley (1990) argued that definitions of reliability and validity are unclear and produce a confusing diversity of ideas. Several authors have discussed the issue of validity. Kvale (1996) for example, claimed that validity involves issues of truth and knowledge. In broader concepts,

validity pertains to the degree that a method investigates what it is intended to investigate. Moreover, Veals (1997) and Hammersley (1995) have explained in more detail that validity is the extent to which the information collected by the researcher truly reflects the phenomenon being studied. On the other hand, reliability is the extent to which the research findings would be the same if the research were to be repeated at a later date or with a different sample of subjects. Denscombe (2003) defined reliability and validity as following:

> *"Validity concerns the accuracy of the questions asked, the data collected and the explanations offered. Generally it relates to the data and the analysis used in the research." P100*

> *" Reliability relates to the methods of data collection and the concern that they should be consistent and not distort the findings. Generally it entails an evaluation of the methods and techniques used to collect the data". P 100*

Ryan (1995) argued that every research design is associated with certain problems which can result in errors, as illustrated by figure 3.6; and it is vital to ensure research validity and reliability at every stage of the process.

Figure 3.6: Errors in research

During the primary data collection stage, the researcher considered Kvale's (1996) discussions on validation at seven stages of the research interview. The thematizing stage involved the validity of an investigation resting on the logic of

the derivation from theory of the research questions of this study. The validity of the knowledge produced at the design stage depends on the adequacy of the design and the methods used for the subject and purpose of the study. From an ethical perspective, a valid research design involves beneficence - producing knowledge beneficial to the human situation while minimizing harmful consequences. Validity at the interview stage pertains to the trustworthiness of the subject's reports and the quality of the interview itself, which includes careful questioning of the meaning of what is said and continual checking of the information obtained. At the transcription stage, the question of what constitutes a valid translation from oral to written language, in terms of choice of linguistic style for the transcript, is considered. In analyzing the information it should be considered whether the questions asked in an interview text are valid and whether the logic of the interpretation is considered. The verification stage entails a reflective judgment as to what forms of validation is relevant to the study and the application of the concrete procedures of validation. The reporting stage considers the question of whether a given report is a valid account of the main findings of the study, as well as taking into account the role of the readers of the report in validating the results.

In addition, during the process of analyzing the data, the researcher has considered three issues: objectivity, reliability, and validity. Denscombe (2003) claimed that good research should have the two characteristics of detachment and open-mindedness to be objective. This research was therefore designed to be detached from considerations of power and money. In addition, as this research favoured phenomenology, it was conducted with an open mind where the researcher also attempted to see things from different points of view. On the issue of reliability, the researcher has constructed and mapped findings that indicated the path and key decisions taken from conception of the research through to the findings and conclusions derived from it. A formal and presentable database of each source of evidence collected was developed in order to increase the reliability of the entire case study, through having a database of each source of evidence and not being limited to the written report.

Yin's (2009) three principles for increasing the validity of the information were

used. Firstly, multiple sources of evidence from documents, water bills, and interviews were triangulated in order to examine the evidence and build a coherent justification for the themes (Creswell, 2003). As Denscombe (2003) has pointed out, triangulation analysis can be regarded as a way of bolstering confidence in validity. Secondly, a chain of evidence was maintained in order to ensure the consistency of the research findings. Thirdly, the researcher developed a draft case study report which was regularly reviewed by key informants. Since there was no standard guide for the case study report, it was essential to plan the case study as the case developed in order to avoid problems at the writing up stage.

However, it is necessary to justify why the researcher did not use computer software packages since there are a number of these that have been developed specifically for the analysis of qualitative data. Even though computerization removes barriers on the scale and complexity of analyses, the researcher still decided not to use computer aided analysis for several reasons. Firstly, simply following the conventions and procedures built into the software programmes destroys creativity of analysis in qualitative research. It leaves little scope for interpretative leaps and inspirational flashes of enlightenment. It reduces the analysis to a mechanical chore. This point of view is supported by Tesch (1990) who stated that a computer does not make conceptual decisions through thinking, judging, deciding and interpreting, among other things. Secondly, the computer is likely to exacerbate the tendency to focus on the superficial content of the text and further decontextualize the chunks of data analyzed. Computers cannot analyze the temporal sequences in the data and cannot understand the implied meanings, which depend on body language. Thirdly, for this small-scale research project, the set-up costs of a computer software package outweighed the benefits, considering the time and budget constraints.

3.5 Summary

This chapter explains and justifies the preferred research philosophy, the approach taken, the design of the study, and considerations of reliability and validity. The research aim and a set of objectives were developed taking into

consideration the limitations in present knowledge discussed previously in the literature review chapter. Thus, for this project, a case study strategy with an exploratory approach was undertaken. Through using such a research strategy it was hoped that it would be possible to develop a richer and deeper understanding of the way EMPs are managed and controlled in a hotel organisation. A single case is used in this study. However, within this single case, eight hotel properties are treated as different case studies. Mixed methods of collecting data have been justified and each source of evidence was analyzed at three levels, and then triangulated and compared with the literature on previous research. Finally, the issues of validity and reliability of primary data were also addressed, in order to show how this research has been designed and conducted with great care.

Chapter Four Findings from Documents

This chapter aims to present findings from assessing relevant documents; three kinds of documents were collected prior to examining water bills and water performance indicators specifically. The evaluation of documents has been conducted according to questions of "what, why, and how" (see table 4.1); and this chapter is structured into three parts. Firstly, the reason for evaluating documents in general is to describe the background of the participating hotel group. Secondly, the examination of environmental related documents aims to determine the linkage between current business performance and environmental performance in order in turn to acquire knowledge of what kind of environmental plan and systems have been integrated into the group's business management. Thirdly, documents deriving from external experts were evaluated in order to identify the influence of external experts or other potential influential factors.

Table 4.1: what, why, and how questions to evaluate documents

	In general: BM	*In particular: EM*
What	- Acquisitions - Continued expansion - Enhanced returns to shareholders	- Reducing substantial resources used, such as water and energy resources
Why	- Investing in building up strong brand - Investing in people - Well positioned in market	- Recognizing the environmental responsibilities that they carry on behalf of their guests, employees, and community
How	- Improve central control functions and cost controlling - Effective internal control system - Benchmarking business performance	- Environmental plan: energy, water, waste, effluent, and emission areas - Environmental action: survey checklist, review, setting tasks and goals, recording, and monitoring
Results	- Financial performance is solid and target goals have been achieved - Operating profit has increased over last five years	- Achieving targeted goals and continuing to improve

4.1 Background of the hotel group

The hotel group is the market leader in Ireland with an established presence in the UK and US markets. Strong growth in recent years has seen the group's portfolio more than double in the last decade. It employs approximately 5,000 people and offers business and leisure travellers a portfolio of three, four, and five star hotels. It is dedicated to providing good hotel products that are appropriate to customers' needs in a friendly, professional and flexible environment. However, the hotel group has been through a transition period of developing the most appropriate business strategy during the merging of two hotel groups with different backgrounds and different business strategies.

The history of the hotel group can be traced back to 1839 and it has expanded its business through acquisitions (see appendix 9). The most important year was 1999, when the group acquired another hotel group, established in 1964; appendix 9 lists significant events regarding hotel development. Following the acquisition of the second hotel group, the enlarged group comprised twenty hotels and thirteen Inns with over 5200 bedrooms. Three directors of the second hotel group joined the Board of the hotel group plc as Non-Executive Directors in order to obtain another perspective on managing the hotel business. Although there were different business strategies in the two hotel groups, the original strategy of both groups had been to expand business through acquisition to achieve a geographic and segmental mix to generate strong business from the corporate, tourism and leisure markets. It is believed that the business strategy of the hotel group still focuses on expansion and that it will become an international hotel group in the near future.

This study has selected eight UK-based hotel properties and table 4.2 summarises their backgrounds, facilities, room capacity, and so on. In general, these eight UK-based hotels are located in city centres and target business and leisure travellers. They can be grouped into two star ratings: three stars and four stars. The three star rated UK-based hotels (H1, H2, H3, and H4) were designed and built as environmentally friendly buildings with minimum facilities and some efficient appliances (e.g. efficient shower heads) in order to use their resources

more efficiently.

Table 4.2: Background, facilities, and services of eight UK based hotels

Main elements	*H1*	*H2*	*H3*	*H4*	*H5*	*H6*	*H7*	*H8*
Stars	3	3	3	3	4	4	4	4
Size	Medium	Medium	Medium	Large	Medium	Medium	Medium	Medium
Number of guest rooms	229	240	265	445	173	191	146	170
Average room occupancy	81%	65%	69%	73%	84%	82%	73%	83%
Building conditions	New	New	New	New	Old	Old	Old	Old
No. of restaurants	1	1	1	1	1	1	1	1
No. of Bars	1	1	1	1	2	2	1	1
Conferences	Max 50 Pers	Max 50 Pers	Max 50 Pers	Max 250 Pers	Max 200 Pers	Max 490 Pers	Max 300 Pers	Max 150 Pers
Laundry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Size of guestroom	Large (5P)	Large (5P)	Large (5P)	Large (5P)	Medium (2P)	Medium (2P)	Medium (2P)	Medium (2P)
Location	centre of city	centre of city	centre of city	centre of city	centre of city	centre of city	centre of city	centre of city
Easy access	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Market Segmentation	business & Leisure traveller	business & Leisure traveller	business & Leisure traveller	business & Leisure traveller	business & Leisure traveller	business & Leisure traveller	business & Leisure traveller	business & Leisure traveller
Written environmental policy	No	No	Yes	No	No	No	No	No
Written environmental training	No	No	No	No	No	No	No	Yes

Moreover, these three star rated hotel buildings are relatively new and all rooms are spacious, accommodating up to five people. On the other hand, the four star rated UK-based hotels (H5, H6, H7, and H8) are old buildings and most of their

rooms can accommodate only up to 2 or 3 people. The average room occupancy in the majority of the hotel properties is similar and only H2 and H3 have relatively low room occupancy. In terms of hotel facilities, most of them have one restaurant, a laundry and one bar; but, except for H4, the three star rated hotels tend to have smaller capacity of in terms of conference rooms than the four star rated hotels; most hotels are medium sized.

Apart from H4, the rest of the hotels have similar backgrounds and have almost the same facilities for their guests' comfort; but it is important to note that H4 is appointed as the regional office and most plans and documents are developed and collected in this hotel. Undoubtedly, H4 has more business activities to undertake than the other hotel properties (see table 4.2). However, in general, the aim of the participating hotel group with these eight hotels is to build up its brand and to invest in people through expanding the business continually and enhancing returns to shareholders. In addition, the participating hotel group is responding in a pro-active manner to new challenges in order to position itself well in the market.

4.2 Reasons for integrating EM into business strategy

The main reason for integrating EM into business management is to improve business performance through increasing sales and cutting costs. Therefore, EM seems to be a critical part of business strategy in order to achieve business objectives.

4.2.1 Business strategy – increase sales through "green tourists"

According to the group's long term strategic plans, some hotels were planning to establish and reconstruct in the potential areas, while some hotels which do not fit into the group's strategic plan for moving forward were expected to transfer ownership in 2003 (McCann, 2003). The participating hotel group is seeking out further development opportunities in prime locations while at the same maximizing revenues in all existing properties. The Board believes that a mixture of owned and leased properties could achieve the twin objectives of continued expansion

and enhanced returns to shareholders (Hopper, 2003). Recently, the implementation of EM programmes is one of the challenges that most hotels have been facing, so the participating hotel group is giving this serious consideration through a series of activities, to be be undertaken gradually in order to improve business performance overall (Beatty, 2002). Moreover, being responsible for the environment is a business strategy because it could create an environmentally friendly hotel which might enhance sales to "green tourists". Most importantly, cost savings are a critical factor in the participating hotel group's approach to environmental issues that may assist managers to use their resources in a more efficient way. In sum, the participating hotel group has integrated environmental issues into its business strategy.

4.2.2 Activities achieving business objectives – improving business performance

The hotel group has good growth prospects and is well positioned strategically to achieve its business objectives. Two programmes of capital investment have been focused on, with a total of over 16 million Euros reinvested in existing properties during the year 2002. One is investment in brand development and another is investment in people (McCann, 2002). Besides, they have emphasized three areas to help achieve their business objectives: increasing sales, controlling costs, and controlling budgets at short term departmental level and long term at the property level. Within the hotel group, budgets were widely seen as being both very useful and very appropriate to the effective management of the hotel group. There was no particular budget regarding environmental issues set for existing hotels but all newly opened hotel buildings are built with water and energy efficient equipment that helps reduce the resources used.

4.3 Findings from environmental related documents

The findings from evaluating these environmental related documents are presented based on the main elements of a classical EMS as evaluated in the literature review chapter. The hotel group has developed company based

environmental policy and environmental action plan.

4.3.1 An initial environmental review (conducted by external experts)

Due to lack of knowledge about reviewing and identifying what actions hotels can take to manage their resources more efficiently, the participating hotel group has been seeking external experts and knowledge to assist managers in improving environmental performance. For example, they have registered in action energy programmes in the UK and most UK based hotels have conducted the action energy general survey (see appendix 10 for an example) in order to review how efficiently the hotel is using energy. The survey starts by collecting consumption data and costs, and involves on-site visits with the general manager, financial controller, and engineer. Then the data on consumption and costs of energy is analysed and compared with observations from the two-day on-site visit. The survey includes the results of the analysis of data and observations and recommendations as to various areas where hotels could make potential improvements through taking particular action.

The hotel group is taking action to improve environmental performance according to this reviewing process. For example, the external consultants have proposed three categories of solutions to improve environmental performance: EM without capital investment, EM with rapid payback (less than one year), and EM with longer payback (less than five years). With these three categories of activities, the external consultants have estimated annual savings of £26,600; the estimated annual kWh could be reduced to 469,000; and the estimated CO2 could be reduced to 169 tonnes.

With the assistance of external experts, the hotel group has conducted a first survey of the consumption and treatment of water within their hotel properties. Based on the results of the survey, they are expecting to reduce the volumes of water used in new hotel properties by the introduction of fittings and equipment which eliminate the excessive use of water.

4.3.2 Well written environmental policy and developed action plan but poorly communicated between head office and hotel property level

The hotel group has developed an environmental policy and environmental action plan, and some environmental related documents have been acquired from IH. However, these documents have been found only at the head office and regional office level.

- **Well written environmental statement**

Since environmental considerations are part of the strategy behind the participating hotel group's new vitality mission and EM programmes are being built into their training and awareness programmes, these considerations are being applied in an in-depth and concrete way by investing in resource-efficient appliances in newly opening hotels. In order to achieve the organisation's mission, the first environmental policy was set out in the year 1992; there was no implementation plan behind this policy. The modified environmental policy was developed in 2001 with a written environmental action plan; however, it is important to reveal that none of the hotels in the UK have a copy of the organisation's written environmental policy while head office has developed and kept a written formal environmental policy statement.

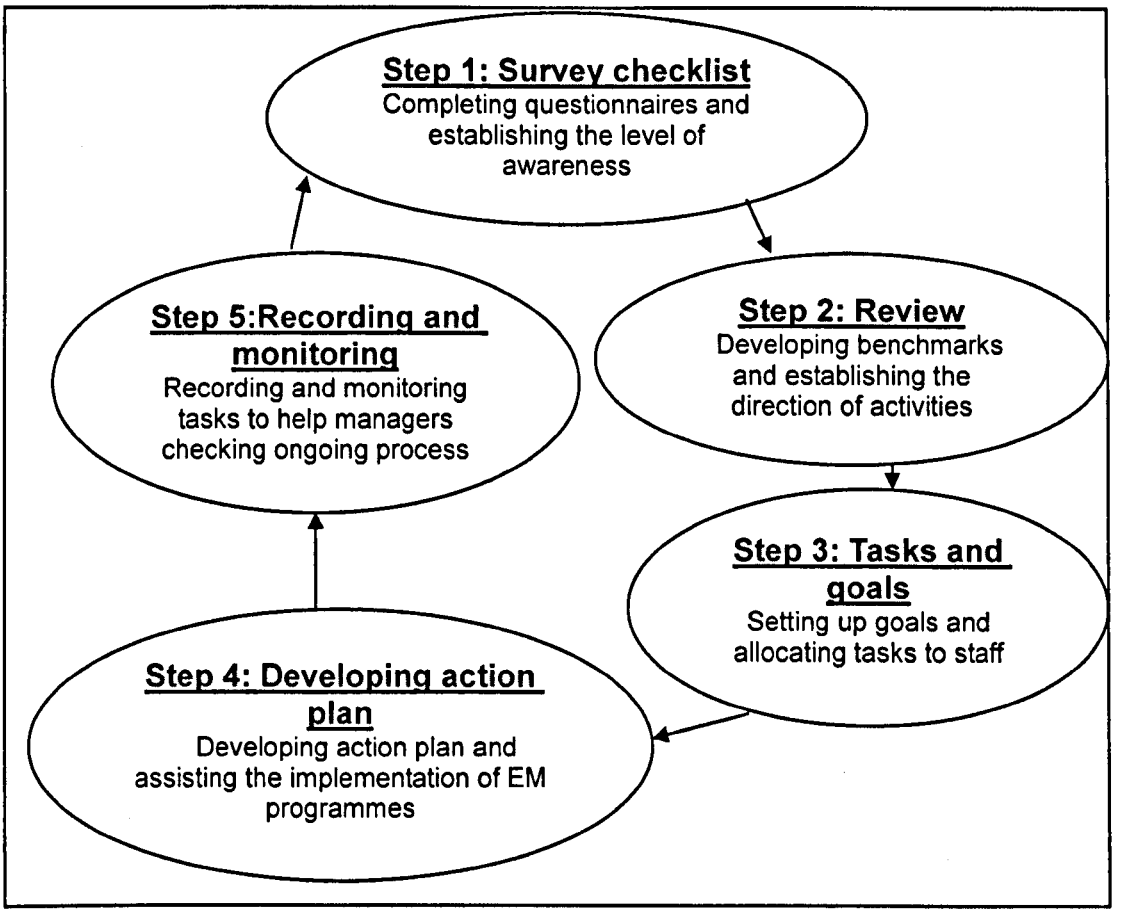
There is no precise indication as to when the hotel group started to develop EM programmes, but a well written environmental policy statement, environmental action plan, and some booklets from external experts and the Hospitable Climate programme have been found. Environmental documents provided by the Hospitable Climate Programme and external experts are more concerned about energy management than related to water issues. However, the hotel group's internal environmental related documents target five main areas: water management, waste management, energy management, effluent emission, and suppliers or contractors (see appendix 13). The participating hotel group had paid more attention to the energy and waste area than to the water area, until, in 2002, a major survey of the consumption and treatment of water at the corporate level was conducted in both Irish and UK hotels.

Surprisingly, no formal environmental documents have been found in the UK based hotels; however, two hotel properties have developed their own environmental documents. One, H3, has developed its own environmental policy which aims to be a model of good environmental practices for sustainable environmental development by acknowledging the responsibility of its staff, customers, stakeholders and local community, and by recognising the importance of environmental excellence. Another, H8, has developed its own environmental training documents, including general information related to energy, water, and waste management. Moreover, it has appointed a human resource manager to train hotel staff to implement environmental management programmes.

- **Well developed action plan but lack of communication between head office level and hotel property level**

The hotel group did not use any formal or certified environmental management systems to implement environmental management programmes. However, in 2001, they developed their own environmental action guide (see figure 4.1), which targeted the specific areas of solid waste management, water, energy, effluent and emissions, and contractors and suppliers. Each area has been implemented by following five steps: survey checklist, review, tasks and goals, action plan form and task recording and monitoring. Firstly, the survey checklist (see appendix 13) involves the completion of a questionnaire to establish the level of awareness about environmental issues that exists, determined by the number of years that appear on the list. The second step is to review collected information requested, as far as it is available, and this lays down a benchmark for the measurement of success, and establishes the direction of activities. The third step is to set up goals and allocate tasks to various staff members as appropriate. The fourth step is to develop an action plan; for example, each task undertaken is recorded on the relevant action plan form and is placed on record. By doing this, any information on this action form is used to assist in the implementation of a similar task in another area or location. The final step is to record and monitor tasks, which will help managers to check on an ongoing basis to ensure the new practices are continuing.

Figure 4.1: Five steps of environmental plan in the participating hotel group



Although the hotel group has developed an action plan to assist managers to implement EM programmes, none of the UK based hotels have received this action plan document from head office. Moreover, they tend to overlook an important element – management reporting - in the action plan and this could result in a gap between the planning stage and the implementation stage.

4.3.3 Environmental planning and implementation (well planned but poor implementation)

Certain responsibilities are assigned to key staff in order to implement actions regarding waste, water and energy, effluent and emissions, and contractors and suppliers (see appendices 12 and 13). Moreover, they have assigned tasks to relevant departments and established goals in water management. In general, the water management committee audited and quantified the volume of waste water

disposed of per year under the waste stream headings identified in the review of solid waste. The key staff to undertake tasks and responsibilities at the hotel include a waste management committee, the accommodation Dept., the Food and Beverage Dept., the Purchasing Dept., and the Marketing Dept. More specifically, water is consumed mainly in the accommodation and kitchen areas; therefore, hotels have set some tasks in order to achieve the aim of water management. The target for accommodation is to reduce by 50% the consumption of water by each hotel guest, who have been using up to five hundred litres of water per day, without causing any measurable inconvenience to the guest. In order to manage water more efficiently, tasks have been set in three main areas: guestrooms, public areas, and food and beverage areas (see appendix 11).

The hotel group has also summarised nine tasks and goals for contractors and suppliers (see appendix 12). In addition, the hotel group has developed an environmental checklist (see appendix 13) for contractors and suppliers in order to encourage the use of certain types of products, and certain technical and design criteria. The main purpose of the company's environmental checklist for contractors and suppliers is to demonstrate the connections within the industry and a commitment to environmental protection. There is a regular review of the contractors and suppliers, depending on the rate of using products. The company is reviewing the use of items such as photocopy paper, letterhead paper, cleaning chemicals, brochures, laundry supplies, food supplies, bulbs and fluorescent tubes, bedroom amenities, and mini-packed products. The idea of reviewing these items is based on the principles of recycling, reusing, and reducing. There is also an action plan form to record progress in the task selected and goals achieved within a certain period. Moreover, there is a task monitoring form to record all tasks undertaken, date completed, and measure of success.

Documents regarding water management were issued in 1998 and 2002 and the environmental director claimed this to be because the group was taking a gradual approach to improving water use throughout the hotel group. In sum, the environmental management programmes in the 1990s represent simply an attempt to approach environmental issues through the development of water, waste, and energy management. However, from the year 2002, the hotel group

started to take a more active approach to implementing environmental management programmes.

4.3.4 Monitoring and measuring environmental performance (lack of auditing and need to put more effort into monitoring environmental performance)

The hotel group has an internal control which is an ongoing process used for identifying, evaluating, and managing the significant risks faced by the group. The process, which is in accordance with the guidance for hotel managers in the combined code issued by the institute of chartered accountants in England and Wales, is regularly reviewed by the board and is in place throughout the accounting period and up to the date the financial statements were approved. The internal control system is designed to manage rather than eliminate the risk of failure to achieve business objectives and can only provide reasonable and not absolute assurance against material misstatement or loss. In other words, management is responsible for the identification and evaluation of significant risks and for the design and implementation of appropriate internal controls. These risks are assessed on an ongoing basis and may be associated with internal and external factors (Beatty and McCann, 2002).

On average, hotel utility costs ranged from 3.5 to 4.5 per cent of total revenue and despite the appearance of being heavily fixed, hotel utility costs have moved almost in sync with hotel revenues. What this implies is that hotels can adjust their utility costs in proportion to increases and decreases in revenue. Given perception of utility costs (including electricity, gas, fuel, steam, and water/sewer) as a fixed cost, as well as its relatively low cost as a percent of total revenue, utility expenses usually do not receive significant attention from management. In short, for the case study hotel group, utility costs are perceived as fixed and immune to movements in business volume. It seems that the local municipality controls the pricing, and the hotels are faced with a set of minimum energy requirements for keeping public areas air conditioned and heated. However, when utility cost increases make the news and when hotel revenues fall, managers are challenged to find cost saving measures and react as best they can to minimize the negative

impacts.

In general, every five years the water companies suggest new prices and these prices are then reviewed by the Office of Water Services (OFWAT) which decides on a price to suit both the water companies and the consumers. For example, the last review saw the water companies suggesting a 29% increase but OFWAT decided on an average 18% increase for the next five years (OFWAT, 2004). There are a number of reasons that water rates have to rise, to cover costs of renewing water pipes and treatment plants and to keep at a good level or even to improve the service that customers receive. In general, a water bill may include three main elements: a standing charge, a charge for water, based on a meter reading, and a charge for sewerage. Charges do differ however between each water company and area. These differences are due to the geographical area which the company covers and water availability. There are several different methods of calculating charges for water. A water company may use one or more of the charging methods that follow:

- An unmeasured charge based on a flat rate charge. The water supply charge is calculated as an amount in pence per pound of the rateable value. This amount varies between companies.
- An unmeasured charge based on a flat rate charge. Some water companies charge a flat rate to all customers without a water meter (households), irrespective of the amount of water used or the type of property they live in.
- An unmeasured charge based on banding. Some companies operate a banding system. The company assesses the water charges, based on, for example, the size and type of the property.
- A measured charge (using a water meter) based on the amount of water, usually per cubic metre, used at a rate approved by the OFWAT.

In general, all hotels control their utility costs in four steps. They first record utility costs on separate sheets (see appendix 14 as an example) and send them to the regional office in order to compare them with other hotels' performances. Then the results are reported both to each hotel and to head office; and those figures will then be reviewed and evaluated in order to make some changes to improve

performance. However, the financial controllers had been recording utility consumption and cost on separate sheets without integrating them into the accounting system and they still regarded utility costs as an overhead even though head office level was starting to find ways to reduce them. A comparison of business performance (utility cost is one of the performance indicators) between hotels is undertaken by the regional office (e.g. southern office or northern office) annually. From the year 2003, UK regional offices have been analysing utility consumption and costs, comparing against the numbers of available rooms and occupied rooms. Similarly, each hotel manager has started to report utility costs regularly to regional environmental directors who are seeking opportunities to cut down costs. Basically, all hotels have been reviewing business performance, which includes utility costs, regularly in order to compare it with other hotels within the group as well as to improve business performance.

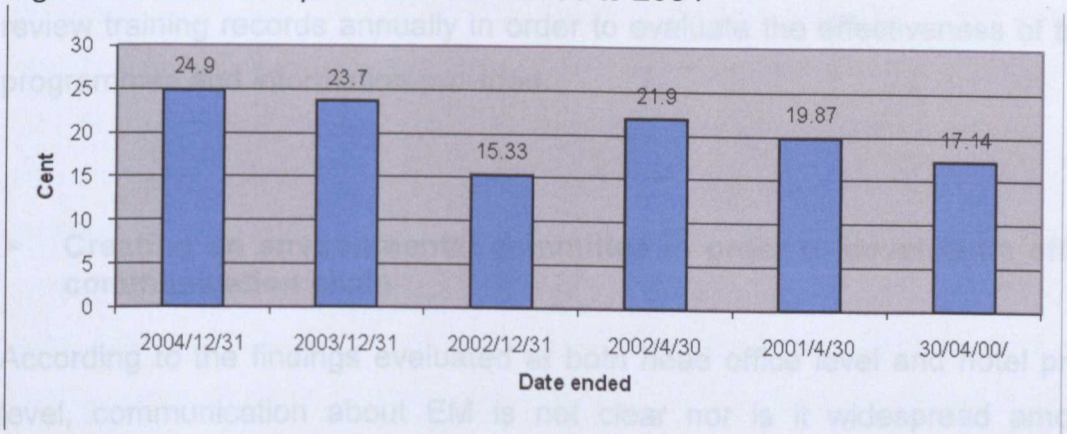
Most importantly, from the year 2002, they have started to benchmark their water usage in proportion to occupancy levels to see how it compares to the industry standard (Green Hotelier standard) of best practice (see appendix 1). However, it seems that comparing to only one external benchmark would not provide a more objective view, especially when the industry standard tends to be higher than it should be and has also not been updated recently. Hence, it is suggested that managers should be cautious while using the industry standard and it is recommended that likely competitor standard and suppliers' information could be used in order to obtain a more accurate standard.

Although the hotel group did not audit their EMPs as literature has suggested, findings showed that the directors have established a number of key procedures designed to provide an effective internal control system of monitoring EMPs, which in turn could contribute more reliable information for managers trying to improve environmental performance. Moreover, the participating hotel group has been found to undertake a more active approach in respect to responding to the results of the conducted "action energy general survey" (see appendix 10) and in being ready to invest time and money in environmental management programmes.

4.3.5 Management review (environmental performance is not included in management reviewing and reporting)

In the participating hotel group, management reports are made regularly to the Board on key risks and the way these risks are managed. In addition, management also reports to the Board on significant changes in the Group's business and any potential risks associated with these changes. The process used to identify and manage risks is an integral part of the internal control environment. There is active Board involvement in assessing the key business risks the Group faces and determining the appropriate course of action for managing these risks (Beatty and McCann, 2002). For example, according to the analysis of annual financial information from 2000 to 2004, the participating group has made good progress with relevant activities undertaken to develop business brand and expand business scope. Moreover, the participating hotel group claimed that all of the group's properties – 32 in all (see appendix 9) – reported an operating profit. Several activities were identified as main factors influencing this successful result. Firstly, a key objective during the year 2002 was the continuation of the strategic direction of the group and this was achieved through the benefits arising from recent acquisition activity and organic growth. In addition, the participating hotel group changed the end date for preparing financial reports in 2002 (see figure 4.2); therefore, the dividend per share in 2002 was only calculated on eight months of operations. According to the financial information collected, it is believed that the participating hotel group is adjusting its accounting system and reporting period in order to provide better information to stakeholders.

Figure 4.2: Dividend per share from 2000 to 2004



However, the hotel group might have reported environmental performance in separate documents; unfortunately, environmental performance seemed to be neglected in the annual management reports. The only place environmental related reports can be found is the "environmental department" at head office level and little information can be found at the hotel property level.

4.3.6 Continual environmental improvements (corrective actions)

By comparing three sources of evidence, this study has identified seven activities that the participating hotel group has reviewed and corrected to improve environmental performance from 2002 to 2004 (see appendix 14 as an example). It is important to note that these future and ongoing corrective activities have been confirmed with the ED in order to make sure the assumptions were not mistaken.

- **Environmental training**

Findings from the documents have revealed that no sufficient training programmes were provided by the hotel group to employees throughout the whole Organisation. However, through interviews with key managers (see appendix 8), it was found that the hotel group is planning to develop employee training programmes throughout the hotel group. For example, the overall responsibility for education and training is held by the ED at head office level; each region will appoint a training coordinator, with individual hotels responsible for department-specific training. The human resource manager is planning to then review training records annually in order to evaluate the effectiveness of training programmes and information provided.

- **Creating an environmental committee in order to develop an effective communication chain**

According to the findings evaluated at both head office level and hotel property level, communication about EM is not clear nor is it widespread among all employees. However, an environmental committee for the participating hotel

group is under development in order to strengthen the reporting system and bridge the gap between hotel level and head office level. To create efficiency in communicating environmental information an environmental committee for the individual hotels and coordinated internal and external communication programmes will be established.

- **External benchmarking – to become aware of their position compared with competitors**

The findings from examining the archival records have revealed that there is a lack of benchmarking of water performance against competitors; but evaluating performance indicators showed that they are selecting similar sized competitors to compare themselves with in terms of environmental performance. Moreover, the participating hotel group has registered for and participated in the Hospitable Climate programme in IH in order to improve environmental performance through benchmarking externally. It is important to note that various external benchmarks have been developed by voluntary associations, and managers were cautious when using them (see appendix 1).

- **Developing more accurate environmental performance indicators**

The findings from evaluating performance indicators have showed that the water performance indicators developed in 2002 and 2003 were only based on numbers of available rooms and occupied rooms. However, the examination of archival records in 2004 and 2005 found that the performance indicators were developed based on the number of guests (see appendix 14 as an example). The head office ED has indicated that some activities will be undertaken to ensure the accuracy of environmental performance indicators in the near future. Firstly, systematic control paperwork will be developed in order to ensure that these critical tasks are performed on schedule thereby leading to a more streamlined management of these activities. Secondly, records of all environmental improvements will be maintained in all areas of environmental responsibility to demonstrate compliance with regulations and effective operations. Thirdly, each hotel will establish and

maintain documentation for the identification, maintenance, and handling of all records.

- **Comparing hotel buildings with similar facilities and size**

The findings from evaluating the documents have revealed that water performance among hotels was compared without selecting similar types of hotel building of similar size. The correction activity is to compare environmental performance indicators with a more similar hotel building in following years. Despite the organisation's best efforts, the potential and opportunity to improve environmental performance still exists. Thus, establishing a corrective action process to enable them adapt to comparing more similar sizes and categories of hotels merits special attention and is a critical part of a successful EM programme (see appendix 22 as an example).

- **Budgetary control – related to investment decisions**

The findings from examining investment in resource saving appliances suggested that there has been no budget set for improving environmental performance in the participating individual hotels' operations. The budget is only set for building new hotels or refurbishing hotels at head office level. According to the head office ED, the budget was negotiated at hotel level in the year (2005) because they realized that budget control that focuses on the costs of environmental protection without highlighting cost cutting could sometimes contradict the management aim of enhancing the organisation's strategy and objectives. Besides, the participating hotel group has invested in efficient appliances in many newly opening hotels to minimize the waste of flushing water (installing flow restrictors, reducing the flushing capacity of toilet cisterns), and to encourage waste reduction practices in cleaning and housekeeping activities (see appendix 13).

- **Making improvements in the monitoring and measurement system**

After identifying problems with monitoring water consumption and costs, several

actions were undertaken in 2004 in order to improve the monitoring system. First, in order to standardize the hotel utility bills from different regions; the regional office collected all the utility bills and negotiated utility prices with the respective suppliers. It was found that most hotel utility bills were collected monthly instead of periodically (three monthly or six monthly), but elements of the utility bills are still variable due to different suppliers' policies (see appendix 14 as an example). Second, the environmental performance indicator of utility consumption and cost per guest was developed in 2004 in order to provide another dimension of improved performance. Third, a separate document on "environmental performance" was developed in 2004 in order to control practices of EM that would help hotel organisations to improve their bottom line.

Finally, in the UK-based hotels, from the year 2003, all utility bills are sent to regional financial controllers and all negotiations of utility prices take place centrally. Hence, hotel managers do not have to make decisions on utility prices and they can just manage their resources more efficiently in order to reduce consumption.

According to its ongoing corrective activities, it is believed that the participating hotel group has continually improved its EMPs.

4.4 Summary

To conclude, this chapter has summarised several points from evaluating both general company documents and environmental related documents.

a) The hotel group has responded in a pro-active manner to new challenges in order to position itself well in the market. The hotel group's business strategy is to enhance sales for shareholders and the aim of implementing EM is to reduce cost and create a positive image. Operating profit has increased over the last five years and targeted goals have been achieved, while some were even ahead of target; and according to the RevPAR, pre-tax profit (before hotel disposals), turnover, and the hotel group's portfolio proved as solid as ever.

b) Four main activities have been identified in the hotel group to achieve business objectives: capital investment, improved internal control systems, cost control, and budget control.

c) Findings have shown that different countries' regulations lead to different ways of dealing with environmental issues. For example, contractors deal with waste in the UK-based hotels, so that Irish based hotels have detailed records on waste, but UK-based hotels have their contractors to do this for them.

d) The existence of a well written environmental policy, designed EM programmes, and an environmental action plan were found at the head office level, but none of individual hotel properties had received copies of those documents. This finding reveals that the hotel group did not communicate environmental related information throughout the whole Organisation.

e) Cost control has improved the bottom line and the participating hotel group is sensitive to changes in corporate spending. There is effective internal control: a set of key procedures has been designed to provide an effective system of internal control. For example, three period-related terms were developed in order to achieve such control – near term forecast, medium term view, and future development. Although the participating hotel group has claimed that it has improved internal control systems the findings indicate that there is still a need to strengthen the monitoring process in implementing EM programmes.

f) Although the hotel group has received assistance from external consultants and experts (e.g. in-house surveys on energy management conducted by external consultants), there is a need to utilize certified EMSs for implementing EM programmes.

g) The focus of capital investment is brand development and investment in people (therefore, EM is not the main focus of capital investment), but investment in advanced technologies in newly opening hotels has been a concern for the hotel group.

Chapter Five Findings from Interviews with Managers

Chapter five aims to determine, from managers' explanations of EMPs, a ranking of the actions most often taken to improve environmental performance. This chapter is structured into three sections and presents the findings obtained during interviews with 21 interviewees at head office level, regional level, and hotel level. The first section introduces interviewees' backgrounds and the second section aims to explore their views of and activities toward the implementation of EM programmes. Finally, interviewees' commitments and responsibilities in relation to the implementation of EM programmes are discussed.

5.1 Backgrounds of interviewees

Dealing with EMPs is a very new activity for the hotel business. Recently, as a result of awareness being raised, and because of pressures to implement EM programmes in the business world, more and more hotel managers have recognized the need for and benefits from implementing EM programmes. Like any other process, successful implementation of EM programmes requires a team approach where people in a variety of relevant areas can contribute. Therefore, it is important to explain why certain people have been chosen for this project. After contacting the participating hotel group (see appendix 6), five types of hotel employees were selected to be involved in this study: head office ED; UK regional ED and regional FC; hotel GM and hotel FC. The interactions between those key personnel and the implementation of EM programmes are very complex. According to the interviews and the analysis of archival records in chapter six, four elements of interviewees' backgrounds influencing the implementation of EM programmes have been identified: experience in the hotel industry; position held in the hotel business; educational background; nationality and governmental regulation.

5.1.1 Managers' experience in the hotel business

A person's thinking and acting stem from their experience. It has been found that

those interviewees with more experience in the hotel business believed that many benefits could be gained from managing and controlling EM, whereas the interviewees with less experience did not expect to gain many benefits apart from cost savings. According to table 5.1, the head office ED with twenty-five years experience working in the hotel business realises that the hotel group should look at EM as an opportunity to cut down on costs and consumption of natural resources such as water. Moreover, the GM of H4 has worked in the hotel business for seventeen years and he claims the hotel group is willing to integrate environmental issues into its strategy and to build sustainably, resulting in a hotel property operating with greater water and energy efficiency. This is a very proactive attitude to improving business performance while reducing natural resources used. The UK regional ED however, used to work in the purchasing field and he has only worked in the hotel business for one and half years. Whatever he does is simply to get cheaper prices that will bring down costs to the hotel organisation. This does not necessarily mean that he does not care about the environment. Compared to the head office ED, he might just be being less active about the implementation of EM programmes. He stated that he believes environmental experts or consultants would be the best people to help hotel managers to implement EM programmes, in areas such as energy and water management.

According to the analysis of water consumption and cost per sleeper night in chapter six, it was concluded that H2 and H3 are the most efficient with water used. Moreover, during the interviews, as well as the ED from head office, the hotel GM from H2 and H3, and the hotel FC from H2 also express positive ideas about the implementation of EM programmes. These two interviewees also have a lot of experience in the hotel business and they know how it operates. With this experience, they can easily apply the concept of EM to their operations and this finding suggests that the experience level of a manager could affect successful EMPs.

Table 5.1: Backgrounds of interviewees

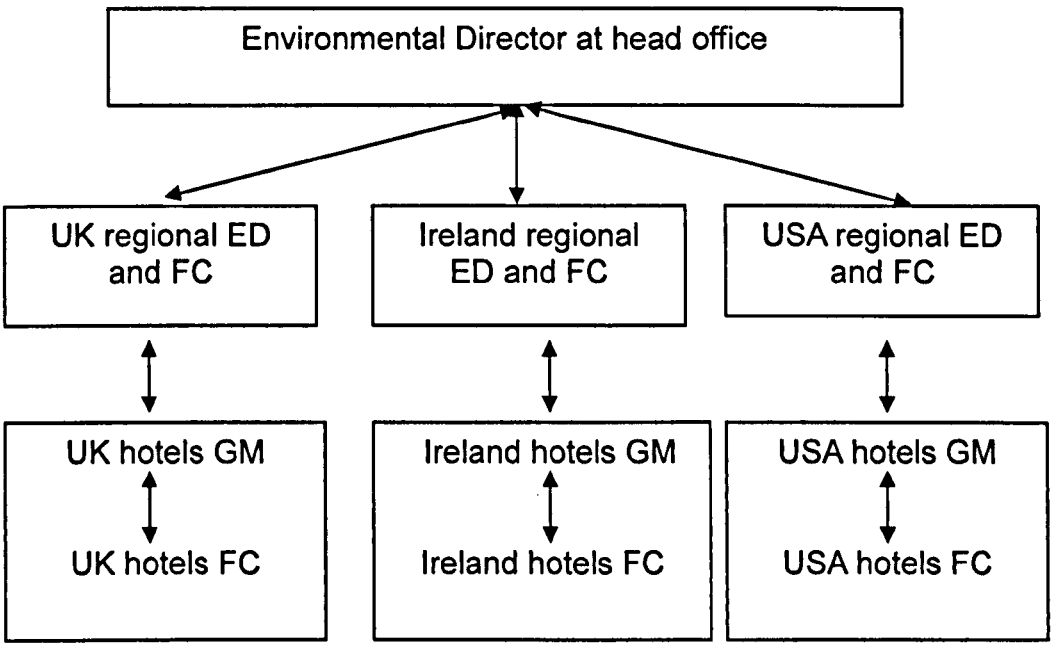
	Experience	*Position held*	*Nationality*
Interviewee 1	25 years	Head office ED	Irish
Interviewee 2	1.5 years	Regional ED	English
Interviewee 3	13 years	UK GM	Irish
Interviewee 4	12 years	Southern Regional FC	English
Interviewee 5	15 years	Northern Regional FC	English
Interviewee 6	13 years	GM-Inn 1	Irish
Interviewee 7	16 years	GM-Inn 2	English
Interviewee 8	12 years	GM-Inn 3	Irish
Interviewee 9	17 years	GM-Inn 4	English
Interviewee 10	10 years	GM-Hotel 1	Irish
Interviewee 11	18 years	GM-Hotel 2	Irish
Interviewee 12	15 years	GM-Hotel 3	Irish
Interviewee 13	10 years	GM-Hotel 4	English
Interviewee 14	8 years	FC-Inn1	English
Interviewee 15	8 years	FC-Inn 2	English
Interviewee 16	6.5 years	FC-Inn 3	English
Interviewee 17	7.5 years	FC-Inn 4	English
Interviewee 18	9 years	FC-Hotel 1	French
Interviewee 19	10 years	FC-Hotel 2	English
Interviewee 20	7 years	FC-Hotel 3	English
Interviewee 21	10 years	FC-Hotel 4	Turkish

5.1.2 Position held in the business by managers

More importantly, the main responsibilities and positions of interviewees play an important role in influencing their perceptions of and attitudes to carrying out their tasks. For example, the main difference between the hotel GM and the hotel FC is in the nature of their position within the hotel operation. In the participating hotel group, the hotel GM is considered as a chief encouraging his brigade to exercise proactive control over costs and sales while the hotel FC is seen as an internal checker enforcing policies and procedures. The Head Office ED claims EM is a very complex process involving several people at different levels within the organisation, and states that senior management should be involved in EMPs from the beginning to the end. Similarly, the regional ED argues that when an effort has the backing of management, it is much easier to get things done, and an effective approach needs to involve the establishment of a task force of managers to direct EM programmes. Five hotel GMs strongly point out that the best approach is to involve people responsible for all aspects of the operation.

Although there is a written document regarding the structure of key personnel implementing EM programmes, the relationship between the participating interviewees was identified more precisely during the interviews. Figure 5.1 illustrates the relationship between head office ED, regional ED and regional FC, hotel GM, and hotel FC. At present, there is an ED responsible for the whole organisation's environmentally related activities and he has a close and direct relationship with the regional ED. Similarly, each region has appointed an ED with another position within a hotel and the southern regional FC is responsible for those hotels located in the southern UK while the northern regional FC is responsible for the hotels situated in northern UK based hotels.

Figure 5.1: Environmental responsibility distribution among key personnel



Moreover, the UK regional ED has also been appointed as a purchasing manager; the UK regional ED is responsible for UK based hotels, and all GMs will normally report the results of EM programmes to their regional ED. There are no standard environmental rules across the three regions. In implementing EM programmes, how they are approached all depends on factors such as the regional ED's efforts, awareness, perceptions, and time available. For example, the UK based hotels have registered as a member of the Hospitable Climate programme in order to monitor energy used; and the Irish based hotels are looking for a similar

programme to join. However, neither of the US-based hotels has started to look for this kind of programme in their region.

In addition, the following statements indicate that at least one interviewee at each level has mentioned that people are afraid to change their routine working process and habits and the only way to implement EM programmes is to rely on those key personnel who can promote them and pursue their employees or colleagues. The following statements from different positions at different levels represent similar ideas about the difficulties of implementing EM programmes. The head office ED is concerned about support from the board and participation from the middle management team and feels that it is difficult to ask people to do extra work because those people already have a lot of work in hand. So he believes that hotel employees will look into it only if there is a positive relationship between costs and EM. This concern can be confirmed by looking at the statement of the UK regional ED that, "*I have been working as purchasing manager for more than ten years and although I have only worked for this hotel organisation for one and a half years, I probably have more knowledge of the market and where to get cheaper products than of how we can reduce costs. However, after contacting environmental consultants, I realise that EM is another opportunity to reduce cost. Therefore, in terms of water, we, as an Organisation could be in a better position in having a written policy stating that we use low flush, used water toilets, cisterns and so on. As an organisation now, that is the sort of area that we would start to move on quickly because that would be a straightforward area.*"

In addition, the northern regional FC mentions that the involvement of hotel employees is critical to achieve the best practices of EM, but it is not easy to change hotel employees' attitudes and perceptions about environmental issues. Therefore, investment in water and energy efficient appliances could be a faster way to reduce resources used in the short term. However, the FC of H3 indicates that decisions on the hotel budget are in the hotel GM's hands and it is up to the hotel GM to put money into areas that can help to enhance hotel revenue or reduce costs. For the most part hotel FCs do not have any power whatsoever to decide how to make improvements in environmental performance, and the major thing they can do is to produce a report with financial figures that may convince a

hotel GM to put money into a particular area. Thus, statements from interviewees suggest that, apart from employee involvement, the power of decision-making about investment in resource- efficient appliances is a critical factor in achieving the set goals.

5.1.3 Manager's educational background

However, if people are more educated in terms of knowledge of the structure and functions of the planet's physical and biological systems, as well as of the impact of humans on the environment, it should be the case that they are more able to perceive possible solutions to environmental problems and also to develop a positive attitude toward EM while managing business. Several interviewees talked about their past environmental education, emphasizing how it influenced their thinking and behaviour about environmental issues. For example, the GM of H3 claims that he is willing to implement any programmes that will reduce the impact on the environment, emphasizing the influence on his attitude of an EM module taken in university. Moreover, a number of interviewees agree that employees integrating their environmental education into their attitudes and practices can help to improve environmental performance, because they are able to use their resources more effectively than others who do not have this environmental awareness and knowledge.

5.1.4 Manager's nationality and governmental regulations

Each nation has its regulations regarding environmental issues; thus, it is important to know how the nationality of managers affects their practices of EM. The hotel group is made up of various nationalities, with the majority being Irish and English. Most employees' thinking and behaviour is also affected by their nationality and culture with regard to environmental issues. The head office ED states that the Irish government is stricter than the UK government on environmental issues, so Irish employees seem to be more concerned about environmental issues than those from the UK. To support the head office ED's point of view, the statement of the GM of H1 clearly explains that in Ireland, there

is a big environmental campaign at present, not just aiming at companies but also targeting households. Media campaigns on TV, in the press, and on the radio about waste disposal are trying to raise people' awareness. Therefore, people are becoming very aware of this issue and it is very high profile in Ireland.

The GM of H5 points out that this is very important from an Irish point of view, where they are much more aware of the environment than in the UK, but he argues that it is important for the group in the UK also. Moreover, the GM of H3 states that Ireland is definitely way ahead of the UK, especially on waste management and recycling, and that he finds that "*the UK based hotels are just not there yet*". There has been more of a focus in the Irish based hotel properties because there is more legislation in Ireland to dictate that they should do it. Moreover, the GM of H3 claims that Irish culture more easily accepts and makes changes than English culture. Therefore, these different attitudes among employees of the same organisation suggest that governmental regulations could affect a person's attitude towards and perception of environmental issues.

Apart from the influences of managers' experience, personal education, responsibilities, and governmental regulations, the commitment of managers could be a critical factor in improving environmental performance. Thus, the following section discusses the perceptions of managers about environmental issues and identifies the degree of managers' commitment to EM.

5.2 Managers' main actions toward the implementation of EM programmes

This section presents findings about managers' actions toward the implementation of EM programmes according to the main elements of an EMS which have been evaluated in the literature review chapter: an initial environmental review; development of environmental policy and environmental action plan; environmental planning and implementation; measuring and monitoring environmental performance; management review; and continual environmental improvement.

5.2.1 An initial environmental review – proactive attitudes toward environmental issues but lack of time, knowledge and experience

Most interviewees thought that they did not have too much time for extra tasks, especially considering that the hotel group did not recruit extra people to implement EM programmes, instead adding environmental responsibilities to those of hotel GMs and FCs. Apart from the head office ED who is completely responsible for the organisation's EM programmes, the rest of the employees involved in the implementation of EM programmes are responsible for more than one task. With the addition of this extra environmental task, it is no surprise that some interviewees felt that they did not have much time for the implementation of EM programmes. Fortunately, despite the limits of time, most hotel GMs and FCs perceive EM as a positive action for both the environment and business, and are therefore still willing to put their time into it. With this positive perception of EM, the commitment to EM programmes from top management is fairly high.

The head office ED is aware that a combination of legislation and voluntary measures is the most effective way to improve environmental performance. Most interviewees are aware that their businesses do have an impact on the environment and they are willing to do whatever they can to reduce this impact. However, different perceptions of EM might result in different EMPs. Although all interviewees work for the same hotel organisation, there are still different levels of awareness of and different attitudes to environmental issues. The head office ED points out that being environmentally friendly is not necessary to drive profits and attract more customers in the short term, but he believes that, in the long term as their environmental awareness grows, customers will come to appreciate what the hotel has done. However, the UK regional ED argues that financial benefit is the main reason for him to pursue environmental policy and implement EM programmes. Moreover, the UK regional FC believes that EM programmes are planned to be implemented throughout the entire business operation, and the hotel group is putting a sufficient amount of investment into implementing EM programmes in newly opening hotels. He states that it is expected that the effects of the investment will be reflected in the reduction of resource usage and payback period; the results of efforts for conservation of the environment can, most importantly, also contribute to the bottom line. In short, top management in the

hotel group seems to have a proactive attitude toward EM.

Unfortunately, most interviewees at the individual hotel level do not have this proactive attitude toward EM because they are facing financial pressures every day. For example, the southern regional FC comments that a hotel FC should be conscious of cost savings. If there are any opportunities to cut down costs then they will definitely investigate the situation further. The GM from H3 expresses the same idea, indicating that there is a need to increase profits and EM is a possible way to cut costs, which eventually improves profit. Moreover, a number of interviewees thought that investment in more efficient equipment was the best solution, and that this would necessarily be the decision of head office because they do not have the extra budgets to invest in environmental related equipment. For instance, the FC of H8 states "*you do have to invest, there's no question. We are doing a project out there that is going to cost a lot of money, and at the end of the day, will improve our performance in terms of how we deal with environmental issues.*" Similarly, the FC from H1 comments that there is little to be done to improve environmental performance, e.g. to reduce water or energy usage, unless the hotel group decides to invest in more water or energy efficient appliances.

This view about investing in more efficient equipment in order to reduce usage fails to see the opportunities for reducing water usage and costs through taking simple actions. For example, checking leaking taps or pipes or communicating with customers about hotel EM programmes may help to reduce resource usage. Moreover, the head office ED notes that it is a good idea that the hotel group has began to work with consultants to carry out functions that they were unable to perform due to lack of knowledge, expertise, and time. In addition, the head office ED indicates the advantages of hiring environmental consultants as follows:

- Environmental consultants can provide an impartial and credible viewpoint;
- An in-house environmental evaluation could run the risk of being blinkered by the business mindset and be unable to see solutions which are evident to an outsider;

- There is also a danger that an internal report might seek to provide the answers that it thought the organisation wanted to hear, rather than the ones they needed;
- A consultant has the advantage not only of expertise, but also of objective independence.

Although those interviewees have different positions and seem to be afraid to "manage" environmental issues due to lack of experience, all except one (FC from H8, who complained that installing a low flow shower head could upset guests and decrease the quality the hotel provides) express positive attitudes about environmental issues. Table 5.2 summarises interviewees' attitudes to EM as found in the interview discussions. The findings from interviewing indicated different attitudes to environmental issues at different levels. The degrees of concern over environmental issues have been categorised into three levels in this study: proactive, active, and passive. In this study, a proactive attitude means that the manager is concerned about the environment, and predicts the impact of business activities on the environment, and will thus take action to prevent negative impact on the environment even in the longer term. An active attitude means that the manager regards EM as an opportunity to increase business profit and will therefore undertake any activity to improve environmental performance which in turn contributes to the bottom line. However, a passive attitude means that the manager considers EM as an extra cost and will only follow instructions from their GM or top management team.

In sum, the head office ED has a proactive attitude to reducing environmental impact through implementing EM programmes no matter how long they take and what the cost is. However, the regional ED and FC are dealing with environmental issues with a cost concern in mind; therefore, it makes more business sense if they can reduce operating costs by implementing EM programmes. The individual hotel GMs and FCs are less conscious of environmental issues, but this does not mean they are not concerned about the environment. It is rather a matter of time and bottom-line pressures, and of lack of knowledge about managing environmental issues. Every hotel GM and FC has to deal with day-to-day activity within a hotel operation, so EM programmes are considered to be the head

office's responsibility. In addition, both head office level and regional level are receiving assistance from external experts in terms of skills and knowledge about managing and controlling environmental performance. Therefore, it is necessary that individual hotels receive the same information and knowledge from experts.

Table 5.2: Interviewees' attitudes to EM

Position held	*Attitude to environmental issues*
Head office ED	very environmentally friendly and proactive
Regional ED	environmentally and cost conscious and proactive
Regional GM	both cost conscious and active
GM-H1	both environmentally cost conscious and active
GM-H2	cost conscious and active
GM-H3	very environmentally friendly and active
GM-H4	both environmentally cost conscious and proactive
GM-H5	cost conscious and proactive
GM-H6	both environmental cost conscious and active
GM-H7	both environmentally cost conscious and less active
GM-H8	both environmentally cost conscious and active
FC-H1	environmentally and cost conscious and proactive
FC-H2	cost conscious and proactive
FC-H3	both environmentally cost conscious and passive
FC-H4	cost conscious and passive
FC-H5	cost conscious and passive
FC-H6	both environmentally cost conscious and passive
FC-H7	cost conscious and passive
FC-H8	cost conscious and passive
Northern Regional FC	both environmentally cost conscious and active
Southern Regional FC	both environmentally cost conscious and active

5.2.2 Environmental policy statement (lack of communication between head office level and hotel property level)

The head office ED claims that hotel employees must first know what the environmental requirements are and how they affect what the organisation does. However, it is difficult to change employees' daily practices without any communication of the relevant information, so environmental policy could be a primary communication tool in changing unwanted practices and creating conditions that encourage positive attitudes toward EM. Most interviewees "assume" that the organisation should have an environmental policy and think that the organisation has already promoted and implemented EM programmes centrally and at a high level. However, discussions with interviewees about

environmental policy at the regional office and hotel property level resulted in one prevalent attitude – the confusion and uncertainty about the existence of an environmental policy statement. For example, the regional ED indicates that the board would have to actually develop a proper environmental policy statement, stating, "*this is what we are doing and what we will achieve*"; and thought that environmental policy should be updated according to an organisation's strategy and mission if they have one. In addition, three GMs say things other than answering the question of whether an environmental policy statement existed with a simple "yes" or "no". For example, the GM of H1 says, "*I believe that articulating EM programmes is essential for mitigating legal and regulatory risk and we need to have environmental policy to guide us*"; and the GM of H5 points out that "environmental policy is developed by the head office and they direct it centrally". Moreover, the answer from the GM of H4 shows that they have their own environmental policy to guide practices of EM, and did not have any idea whether the hotel group had developed an environmental policy statement or not. These different responses from several GMs to the question of the existence of an environmental policy suggest there is inconsistent management of environmental performance among individual hotels and also that communication of EM programmes throughout the hotel group is not done properly.

Similarly, none of the FCs had ever seen a written environmental policy from the organisation; they just do what their GMs say. For example, the FC of H3 was asked whether there was an environmental policy in the hotel and his answer was, "*I am fairly certainly it is there, um....so...I haven't gone off and looked.*" In addition, the FC of H5 assumed that the hotel group might have one but he had never seen it. These answers from FCs about documents on environmental policy reveal that the hotel group has to make sure that it properly and clearly communicates its environmental policy statement to hotel employees, even when their roles and responsibilities are not linked directly to the implementation of EM programmes.

The hotel group did not, in fact, use environmental policy as a bridge to communicate environmental information throughout the hotel group. However, the head office ED indicates that environmental considerations are already a part of

the group's innovative project management and capital investment processes, and many other aspects of its hotel business operation. Widening this commitment to encompass other business processes would be a key part of forward planning in the near future (from 2006). Also, in 2003, work started on awareness training, with the development of communication and training aids focused on marketing. In addition, although no interviewee had seen the environmental policy statement, almost all interviewees believed that their hotel group aims to go beyond the legislative requirements for reducing impact on the environment.

In short, the findings show that the hotel group did not effectively communicate environmental policy statements from top to bottom levels, not stimulating employee awareness about the existence and content of EM programmes, enhancing the acceptability or relevance of these instruments or improving the efficiency of their implementation.

5.2.3 Environmental planning and implementation (centrally oriented planning and implementing of EM programmes and lack of certified EMS)

Procedures in an environmental action plan can be set to allow an organisation to integrate environmental concerns and issues into day-to-day decisions and practices, thereby improving both environmental and business performance. Therefore, it is vital to evaluate whether an environmental action plan has assisted the participating hotel group in setting objectives and measurable targets; creating responsible departments; and timelines.

The organisation's environmental action plan has only guided the head office ED in supervising the process of implementing EM programmes and each individual hotel has its own way of dealing with EM programmes due to having a different management team and lacking a standard way to follow EM. Several interviewees talk about different ways of dealing with EM programmes. For example, the GM of H5 points out that head office might have developed an action plan to implement EM programmes, but each hotel management team obviously has its own way of

implementing EM programmes. In addition, the GM of H1 states that, "*whatever action plan we use to implement EM programmes, such as energy, water, and waste management, the most important thing is to show to the head office it would be the best way to save money*". He further adds that if the individual hotels could prove to both regional managers and head office managers that a reduction of cost had been made through any system or activity, they would definitely receive support from the hotel group.

Although the individual UK-based hotels did not have copies of the organisation's action plan, it had guided the head office ED to implement EM programmes centrally. Moreover, the head office ED argues that taking responsibility for the environment is becoming a part of the hotel group's business practice and there is a commitment to develop a better environmental action plan which can be integrated into the organisation's strategy of hotel expansion. However, the findings show that EM programmes are implemented centrally and only the head office ED and two regional GMs are aware of environmental policy and environmental action plans.

Besides, it was found that the hotel group did not have any EMS for the implementation of EM programmes, although they are seeking a suitable EMS such as the International Standards Organisation (ISO) 14000 series which is an international standard for EMS, or the World Travel and Tourism Council's GREEN GLOBE international certification. Most interviewees are aware that an effective EMS could help a hotel assure its guests of commitment to EM, as partners in programmes such as recycling, linen and towel reuse, etc. The most important thing is that EMS can set specific and realistic performance objectives and targets, and allow the hotel to monitor to see if the objectives and targets are being met. However, none of participating hotel properties has an EMS and the head office ED argues that these programmes are not easy to comply with. This is not to say that they are not implementing EM programmes such as water conservation. They have developed an environmental action plan, which they consider to be their own EMS to implement EM programmes, and this plan has incorporated some components of Global ISO 14000 without seeking certification.

The GM of H4 further points out that the reason for not seeking certification for an EMS is that this would add extra costs for the hotel Organisation.

5.2.4 Checking and measuring environmental performance (centrally oriented monitoring of EMPs and need to improve the controlling process of EMPs)

This section emphasizes how managers monitor their EM programmes in the main areas (guestrooms, Food and Beverage Dept., purchasing Dept., and marketing Dept.), and how managers improve environmental performance through their accounting control system.

➢ Monitoring environmental performance in hotel operations

Without a detailed investigation of monitoring activities undertaken in a hotel organisation, an operational view on improving environmental performance will be lacking. This section aims to provide an insight into how individual hotel units monitor their environmental performance in the hotel operation process, using the area of water as an example.

◆ Guestrooms – need to communicate with guests in order to get support

The guestrooms are the main source of revenue for the hotel group and most investment in water management has focused on the area of guestrooms. Several significant activities have been identified to reduce water usage in guestrooms. For example, the head office ED claims that the organisation is building more and more hotel guestrooms equipped with water efficient appliances. For the existing old hotel buildings, some routine tasks are carried out, such as the repair of leaks, as a leaking toilet can waste more than 50 gallons of water each day, and a dripping tap or showerhead can waste up to 1,000 gallons per week. The hotel group is developing some guidance on monitoring and reducing water usage in the housekeeping department. For example:

- Instruct cleaning crews in using water efficiently for mopping;
- Switch from wet carpet cleaning methods, such as steam, to dry powder methods;
- Wash exterior windows with a bucket and squeegee rather than power washing;
- Change window-cleaning schedule from periodic to as required.

However, there are some variables that change according to the type of guestroom and these affect the efficiency of usage; a regional ED points out that the size of sinks and wash bowls is critical to reducing water consumption, so smaller size sinks and wash bowls are installed in all newly built hotels. The GM of H6 adds that the size of guestrooms affects the water consumption according to the capacity of accommodating guests. In general, the analysis of individual hotels' documents shows that four star hotels' guestrooms accommodate only two guests while three star hotels can accommodate up to five guests. Due to the different capacities of guestrooms, the measurement of performance indicators should be developed from a different angle (e.g. per guest not per room) in order to ensure the accuracy of evaluating performance. This is confirmed by the FC from H1, who describes the current measure of utility cost as not as accurate as it should be, because the performance indicators are developed based on each room sold instead of on the total numbers of sleeper nights. However, the head office EM argues that the analysis of performance indicators for the year 2005 shows that the hotel group is improving its measurement system by producing several performance indicators, e.g. usage and cost for total available rooms, usage and cost per room sold, and usage and cost per sleeper night.

Moreover, it is important to note that performance analysis did not include guests from conferences and restaurants, because, as FC from H2 indicates, the restaurant and bar income is very low which won't motivate accountants to monitor it closely; and also guests attending conferences tend to live in the hotel, so it would not be an accurate measurement if these figures were added to those of sleeper nights. In most guestrooms, there is a note providing information on dealing with environmental issues, and this outlines how guests staying at the hotel can help meet environmental related objectives. Most hotel guests are

willing to cooperate with this programme and the group is thinking about keeping track of countless little bottles of shampoo and bars of soap in order to provide a baseline for following years.

The head office ED explains that the group is also trying to develop some pamphlets containing environmental related information for all guestrooms throughout the hotel group. Similarly, the GM from H3 notes that they are building five sample green rooms and the hotel group's environmental committee (head office ED, regional ED, regional FC and regional GM) will decide which sample to go with. Hopefully in the near future, all newly built hotels will integrate some green rooms in order to provide an optional choice to guests. Another issue is that most participating hotel properties use towel and sheet cards to ask their guests to consider using towels more than once and not having sheets changed every day; and most customers were willing to cooperate with this policy. Moreover, the group is planning to record towel consumption to compare it to previous years in order to develop performance indicators for the future. However, it is important to deal with environmental issues as well as with customers' concerns about quality and comfort. The finding suggests that although some interviewees agree that soap and shampoo dispensers installed in guestrooms are a 'super choice' because they kept hundreds of thousands of little plastic bottles from ending up in dumps; most managers also like it because it saves them money; and most housekeeping staff are happy to cooperate with this policy because it is a lot easier and quicker for them to prepare rooms, not all hotel guests (as indicated by the GM in H4) were happy with dispensers, due to lack of communication about aim of this programme. They have tried sending a letter explaining the purpose of using dispensers and received positive feedback from hotel guests. This finding suggests that communicating with hotel guests about what the hotel is doing is really important to get their support.

- **Food and Beverage (F & B) area – need to develop more clear guidance and records of how to reduce water usage**

In the F & B area, water plays a significant role in cleaning, processing, and

formulating products as well as meeting many demands from guests. The GM of H6 believes that the usage of water in F & B operations could be reduced via two areas: equipment design and behavioural patterns. Improved technology could eliminate many of the water issues associated with equipment, as more rigid standards have been created to curtail excessive water use. An effective part of water saving in F & B is related to behavioural patterns in the facilities; education and training programmes and performance measurement can influence the behaviour or attitudes of employees. Although the F & B area is commonly overlooked in the participating hotel properties, there are many ways to reduce water usage in the kitchen, restaurant, and bar areas. Most participating hotel properties have undertaken activities, similar to those in the housekeeping department, to ensure that water is used efficiently: The GM of H3 notes that it is not easy to manage water issues because they are struggling to balance the needs of guests with the many benefits of reducing water usage.

Moreover, according to the GM of H4, saving water has not been a major consideration in restaurant and bar areas and there is no clear integration of EM programmes into F & B operations. He further explains that this could be due to the organisation's strategy, which mainly concentrates on the revenues of guestrooms. However, several water appliances were found during visits to F & B areas (see later in this chapter) and most participating hotel properties had water-efficient dishwashers installed. Unfortunately, records and other evidence are not available to show whether F & B operations are inefficient in terms of water used or how to monitor water used in F & B areas.

- **Purchasing – need to develop a more clear environmental purchasing policy in order to put pressure on suppliers to improve environmental performance**

Purchasing activities could be one of the most important factors influencing the success of cutting costs; any decision-making on buying products impacts on the environment. The hotel group tries to get the most reasonable water prices every year. For instance, the FC from H8 indicates that they had a new water supplier for

the year 2004 and this would save five to six percent per room per year. In terms of purchasing environmentally friendly products, the group does not have a clear purchasing policy; however most hotel GMs from the top down to the bottom level tend to seek less hazardous products for the environment. For example, the southern FC states that "from an environmental point of view, we are very much aware of it, and our suppliers are willing cooperate with us to take away plastic and get rid of a lot of cardboard",

None of the interviewees realizes that hotel purchasing activities could affect their suppliers, influencing them to move towards more environmentally friendly products. It must not be forgotten then, that the hotel purchasing policy or decision-making does have a significant ability to pressure suppliers to modify their activities. Although the participating hotel properties do not have clear environmental policies for their suppliers, they do have the intention of introducing them in the future. Thus, the head office ED expects that an environmentally committed organisation would not only undertake activities with a reduced detrimental impact on the environment, but would also be able to pressure suppliers to behave in a more environmentally responsible manner.

- **Marketing – a way of communicating with stakeholders about EMPs**

The core features of a marketing department are options for validating communications to interest stakeholders and also consideration of how marketing activities utilize limited resources while satisfying consumer wants, both those of individuals and of industry, as well as achieving the selling organisation's objectives. In short, environmental marketing could differentiate an Organisation's services and products. Unfortunately, most interviewees believe that environmental marketing refers solely to the promotion or advertising of products with environmental characteristics. This could be the reason that the hotel group did not publish the results of their successful EMPs at an early stage, for example the fact that water consumption had been reduced over three years (2002 -2004) throughout the hotel group. In addition, several interviewees seem to believe that environmental marketing is just an unrealistic option. For example, the GM from

H1 comments, "*there are many resorts around the world who are promoting themselves as "ecotourist" facilities, i.e., facilities that "specialize*" in experiencing nature or operating in a fashion that minimizes their environmental impact; but are they really doing this?" Moreover, the GM from H7 argues that when hotels attempt to become socially responsible, they may face the risk that environmentally responsible actions will be considered only as marketing tools by interested parties, such as government, customers, and the local community. However, the head office ED claims that the organisation is beginning to realize that it must achieve profit related objectives as well as environmental objectives with marketing activities.

➢ Accounting control system

Accounting information could aid managers to measure any practice's relation to business performance, and today it is becoming important to provide environmental performance data about the organisation in annual reports enabling shareholders, investors, employees, customers, and the general public to be assured that environmental impacts have been properly managed and reduced. Like every business practice, a number of practical problems encountered in measuring and controlling EMPs were identified through interviews with key managers.

First, some interviewees seem to overlook the importance of reducing usage and only concentrate on the cost. For example, the FC from H8 comments that, "*In terms of recording the environmental financial information, obviously I have produced usage reports every month, where we actually see the costs rather than the usage, the usage in units, because in units it wouldn't make any sense to anyone*"; The emphasis on the cost could mislead managers taking actions to improve performance, as the findings from evaluating water usage and water cost in the next chapter show that some participating hotel properties have reduced water usage while the total water costs have increased. Consequently, these hotels are facing the pressure of identifying what influential factors not only increase cost but also raise water usage.

Secondly, apart from the head office ED and regional ED, most individual hotel interviewees complain about the lack of communication of EM between head office level and operational level. As the FC from H5 indicates, "*it is important for the organisation to communicate with its employees about EMPs by analysing and measuring utility consumption through comparison with other hotel properties every month*". In short, the hotel group did not use the accounting system to communicate environmental performance between head office and individual hotel properties over the past two years and most of the interviewees thought what they were doing was just common sense. Moreover, some interviewees were found still to be ignoring the effects of EM being short-term oriented and this attitude might cause the business to be less profitable, valuable, and competitive. This is bad for business and also for the environment (a lose-lose situation). In a more extreme case, the GM from H7 believes that EM is not scientific and that they do not need a budget for it. Moreover, when asking about efficient showerheads in the hotel, he could not answer if they had installed efficient showerheads.

Thirdly, no form of "environmental accounting" or "ecological accounting" has been found in the hotel group and informal reporting related to environmental activities takes place occasionally within regional hotels, without communicating with the hotel property level. Most interviewees are unaware of the meaning of environmental accounting which could help to praise good environmental performers and seek to change the behaviour of poor performers. Since no such environmental related accounting has been developed, the hotel group still treats utility costs as uncontrollable costs in the overhead category of the profit and loss statement.

Fourthly, there is no formal process to record water usage and costs that could be used to conduct a comparison between the hotels. Each individual hotel simply send all the variable information to the regional office and the regional financial controller is the one who analyzes those variables of data and puts them in a standard form to measure them as comparable units. In sum, the hotel group did not compare hotels' water usage according to similarities of facilities or size, so most interviewees doubted the accuracy of measurements from both the regional

office and head office. This can be confirmed by the statement of the southern FC that, "*you need to have exactly the same operation or facilities to compare with each other and obviously the smaller properties' usages are less than bigger properties.*" In addition, the northern FC also emphasises that it is difficult to compare water costs and usage with other hotel properties due to being different sizes and having different facilities. Moreover, the FC from H1 claims that utility costs are unique costs because they vary in accordance with what each hotel sells and how big it is. So it varies every day, since each department and every hotel will be different. In addition, there are different focuses on controlling water and usage between different financial controllers. For example, the FC from H8 thinks that usage equals costs, while the financial controllers from H1 and H3 opine that costs could be reduced not only by cutting down on usage, but also by negotiating cheaper water costs from suppliers every year.

Fifthly, the meter is another factor that could affect the efficiency of water usage, but not many interviewees were aware of the importance of water metering. For example, the FC from H6 argues that it is not practical and it would not have a financial impact in that a breakdown could not be given for each area of the hotel operation since none of these had separate meter readings for every department. The FC from H3 points out that most financial controllers are focusing on costs rather than on other factors and this focus may miss opportunities to contribute to the bottom line. This is supported by the statement of the FC from H8 that, "readings would not mean anything because those figures do not have value; so most financial controllers are interested in the cost. Then the cost can be compared with the budget and this comparison is more what is relevant, rather than what the reading is, because the reading alone would not say anything". Further to this, the statement of the FC from H8 can be seen as a summary of interviewees' attitudes to meters, basically the contention that most individual hotels have very stable water usage according to previous records and that it is predictable because it is very consistent. According to him, if the water usage suddenly went up, there would be two possible reasons for this; either the reading is wrong or the meter has a fault.

Although this study identifies five main problems within the hotel group's

accounting control system in relation to the controlling of utility costs, the head office ED stills argues that they are trying to simplify environmental related accounting with external experts in order to develop an appropriate environmental related accounting document. In the mean time, they have recorded and monitored utility usage and costs in order to compare with previous years and between the individual hotels, and it is expected that the hotel group will issue a specific environmental related accounting document in the near future.

5.2.5 Management review - a detailed investigation in the hotel operations but lack of communication of EMPs throughout the whole Organisation, and also with external stakeholders

The findings of the interviews are actually consistent with the findings from analysing core publications, such as the corporate documents of six-month reports and annual reports, which were found to reflect the fundamental principles of the organisation's EM. However, this study suggests that the hotel group did not have a selection of corporate communication materials, explaining the reasons for the existence of EM and showing its environmental performance. Environmental related reports were not produced and most interviewees were not informed about the actual UK environmental requirements. However, the head office ED claims that his organisation was complying with governmental regulations in terms of water management and that they were managing it centrally instead of locally. Due to time and capital constraints, the hotel group still makes the decisions with key employees. Therefore, there is no need for managers to produce reports to communicate with employees, but most managers have reviewed their business practices and facilities in order to reduce operating costs.

During the interviews, it emerged that for a number of technical questions, e.g. concerning water systems, 6 interviewees could not give satisfactory answers immediately. The impression was that environmental concerns were not a main priority for them, but, based on the information from the other 15 interviewees, this section has summarized three main activities which managers have reviewed in order to improve environmental performance - activities that have been carried out without any capital investments; investments with medium term payback of less

than one year; and investments with a longer term payback of more than one year. The first category of activities are decided by the individual hotel GMs and small investments in more efficient equipment are also decided on by the individual hotel's relevant personnel who can prove to the hotel GM that to spend will possibly reduce operating costs. However, large investments are decided on by head office, which is a reasonably long process.

➢ Activities carried out without any capital investments

According to the FC of H1, if there is no investment in water or energy efficient appliances to help them to reduce water and energy usage, they will then take extra time and care in making observations, rather than putting any procedures in place immediately, to make sure that they are not missing opportunities of cutting down costs. Since there is no formal standard of actions that can be taken to reduce water usage, each individual hotel property has its own way of doing it, but most of them are quite similar. A number of activities without any capital investment have been identified as follows:

- A review of water tanks and water ducts (all hotels);
- Elimination of leaks and water drips (at water valves, taps, etc); the offering of a linen reuse programme (all hotels);
- Revision and maintenance of installed water saving appliances; operation of the dishwasher to achieve the best results by taking advantage of its maximum capacity through things such as filling the basket to its maximum capacity (H1, H2, H3, H4, H7);
- In the kitchen, charting the actual cost of consumption versus what it could be (Potential) (H2, H3, H4, H7, H8);
- The separation of table linens into slightly soiled and heavily soiled before sending to the laundry, as heavily soiled linens require laundering in higher water temperatures (95C) with stronger detergents (H1 and H2);
- Checking the water supply system for leaks, and turning off unnecessary flows; the shutting off of the water supply to equipment and areas that are unused; reading of the water meters monthly; comparison of the results to the

same month of the previous year; the identification and fixing of leaks immediately (all hotels);

➢ **Investments with medium term payback of less than one year**

The decision to invest in water efficient appliances in a hotel is normally made at the corporate level; however, during visits to the participating hotel properties, it was found that some decisions were still taken at the hotel property level if the amount of investment is small. For example:

- H2 has installed automatic water shut-off valves in the bar at a cost of around 500 pounds
- H1, H2, H3 have installed signs encouraging water conservation in employee and customer toilets, the guestrooms, and employees' office;
- The assistance of external experts in controlling and monitoring performance indicators; e.g. costs and consumption are reviewed on a per occupied room basis and this conveys the impression that the actual usage of water occurs in the guestrooms (H1, H2, H3, H4, H5, H6, and H8);
- The education of employees about environmental issues is considered in this category because of the small amount of capital investment. E.g. conducting contests for employees (e.g. posters, slogans, or conservation ideas); installing signs encouraging water conservation in employee and customer toilets (H1, H2, H3, H4, and H8).

➢ **Longer term investments of more than one year**

The decision to invest in water efficient appliances is made at the head office level. Most water efficient appliances are installed while building hotels, so no participating hotel properties have records as to the payback period for the water efficient appliances. However, head office have kept records of water usage according to the date of hotel opening in order to see whether the installation of resources had been a critical factor in reducing resource usage or not. It is very difficult to measure or calculate the returns from investing in those efficient

appliances because the hotel group has tried to invest money in only newly opening hotels instead of in existing hotels.

Thirteen water efficient appliances have been identified in order to conduct an in-house survey in participating hotel properties and explore what kind of water appliances have been installed and how they affect water usage. Table 5.3 summarises the total number of water appliances installed in the participating individual hotels. Apart from the appliance used for the recycling of waste water/rain water, the other twelve water saving appliances have been installed in several UK based hotels. Among these hotels, H1 and H2 have installed the most water saving appliances and, as expected, both hotel GMs indicated that these appliances have reduced their water consumption by a large amount, and also the costs compared with other hotels. From table 5.3, it is obvious that the hotel group has put more effort and attention into new hotel buildings (H1, H2, H3, H4) instead of the existing old hotels (H5, H6, H7, H8). However, the GM of H8 does not really agree with this strategy and states that, "*I believe that newly opening hotels have capital to invest in more water or energy efficient appliances, but hotels with old buildings need a careful evaluation of the results of those appliances and the decisions won't be made locally, but instead by head office or centrally.*"

In addition, the head office ED argues that they could invest in many things all at once but soon they would find that people would lose interest. They are doing things gradually and for the long run. Besides, it is necessary for them to look at the planning stage of building a hotel property because building an efficient building can not only cut down on resources used but also protect the environment. Moreover, they must change old existing old properties slowly because they need to look at performance indicators through the comparison. However, things won't go easily, or just as the head office ED expects because the regional ED notes that, after the instalment of water appliances, technical and financial support is needed to help the hotel business correct present inadequacies and build up the capacity to operate a better system.

Table 5.3: Water saving appliances

	H1	*H2*	*H3*	*H4*	*H5*	*H6*	*H7*	*H8*
1.Water efficient shower head	Yes	Yes	Yes	Yes	No	No	Yes	No
2. Two level flush box cisterns	No	Yes	No	No	No	Yes	No	No
3. Water displacement bags in toilet cisterns	Yes	No	Yes	Yes	No	No	No	No
4. Aerators on Taps	Yes	Yes	No	No	Yes	No	No	Yes
5. Spring loaded taps	No	No	No	Yes	No	No	No	No
6. Installed smaller sinks	No	No	No	Yes	No	No	No	Yes
7. Supply restrictor valves and flow controllers	Yes	Yes	No	Yes	No	No	No	No
8. Designing a plumbing system	Yes	Yes	No	No	No	No	No	Yes
9. Insulated hot pipes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
10. Providing optional towel wash	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11. Infra-red urinal control	Yes	Yes	Yes	Yes	No	No	No	No
12.Water-efficient dishwashers	Yes	Yes	Yes	No	No	No	Yes	Yes
13. Recycling of waste water/ rain water	No	No	No	No	No	No	No	No
Total	9	9	6	8	3	2	4	5

Besides, it is important to note that the hotel group's integrating investment in water saving appliances into new hotel building projects is driven not only by financial benefits but also by governmental regulations on water. The results from these compulsorily installed water appliances motivated the group to become proactive toward EM and it is expected that more and more hotel properties in the group will install water saving appliances to achieve the best water performance. However, there is another concern about the instalment of efficient appliances, since the Northern GM states that:

"*the equipment needs to be maintained regularly and this could be critical to successful EMPs. Any failure of this equipment could lead to process shutdowns with their negative ramifications on the operating costs of the business. Therefore, it is important to review and correct operation activities or equipment on a regular basis in order to prevent such a loss to business*".

In sum, most interviewees believe that an active and responsible attitude could make a successful organisation even stronger and this belief is consistent with the findings about organisational vision, strategies, environmental policies and EM programmes in chapter four and water performance evaluation in chapter six. Most of them are vigorously committed to improving environmental performance through integration at operational level.

The head office ED talks about activities undertaken in implementing water management. Firstly, water management is integrated at management level into organisational strategy and is a part of the planning of new projects, in the sense of evaluating water efficiency, which in turn helps the organisation to reduce operating costs. Secondly, the top management team is encouraging regional GMs and regional FCs who do not have time to give to environmental issues into a continuous improvement process, which is a critical step in awakening consciousness of resources used and in developing an environmental culture within the organisation. Thirdly, the head office ED, regional GMs and regional FCs are working together with external experts to improve environmental performance by reviewing relevant practices and monitoring relevant performance indicators.

The head office ED has conducted a review of EMPs and summarized several future actions for a corporate environmental action plan as follows:

- Assigning an environmental coordinator team to support all hotels' EM programmes and assist the GM in implementation at hotel level to achieve environmental goals;
- Establishing appropriate environmental action according to each hotel's characteristics at hotel level. This could represent a roadmap for the hotels' implementation of EM programmes;
- Developing an environmental handbook, this contains practical tools and examples of environmental action to take. It is expected that an environmental handbook will help the environmental team to develop their local action plans;

- Developing and launching environmental training programmes for the implementation of EM programmes at all hotels. This training programme contains general knowledge of how a hotel can impact on the natural environment and local community and of what action employees can take to make a difference, as well as technical knowledge about existing advanced technologies or equipment to help hotels use their resources more effectively;
- Improving the monthly reporting of energy, water and waste at the corporate level in order to help hotels detect their inaccuracies and inefficient use of their resources;
- Organizing regular seminars in order to raise environmental awareness from top to bottom.

5.2.6 Continual environmental improvement (progressing)

By comparing three sources of evidence (documents, archival records, and interviews), this study has identified seven activities that the hotel group has been reviewing and correcting to improve their environmental performance from 2002 to 2005. Most importantly, these seven activities will be reviewed continuously and will be modified as appropriate during the implementation of EM programmes.

➢ **Environmental training – need to develop training programmes in relation to EM**

The findings from documents reveal that no sufficient training programmes were provided by the hotel group to employees throughout the whole Organisation. However, through interviews with key managers, it was found that the hotel group is planning to develop employee training programmes throughout the hotel group in the near future. The overall responsibility for education and training is held by the ED at the head office level. Each region will appoint a training coordinator, with individual hotels responsible for department-specific training. The human resource manager is planning to then review training records annually in order to evaluate the effectiveness of the training programmes and information provided.

- **Creating an environmental committee – need to develop an effective communication chain to control EMPs**

According to the findings from documents and interviews communication about EM is not clear nor is it widespread among all employees. However, the head office ED explains that an environmental committee is being developed in order to strengthen the reporting system and bridge the gap between hotel level and head office level. To create efficiency in communicating environmental information an environmental committee for the individual hotels and coordinated internal and external communication programmes will be established in the near future.

- **External benchmarking – need to be aware of their position compared with competitors**

The findings from examining archival records reveal that there is a lack of benchmarking of water performance against competitors; but the regional ED claimed that they are selecting similar-sized competitors to compare themselves with in terms of environmental performance, in order to assess their own performance. Moreover, the case study hotel group has registered for and participated in the Hospitable Climate programme in IH, in order to improve environmental performance through benchmarking externally. However, it is important to note that various external benchmarks have been developed by voluntary associations, and managers were cautious when using them.

- **Development of performance indicators – need to develop more accurate environmental performance indicators**

The findings from evaluating performance indicators show that the water performance indicators developed in 2002 and 2003 were only based on numbers of available rooms and occupied rooms. However, the examination of archival records for 2004 and 2005 indicates that the performance indicators have been developed based on the number of guests. The head office ED indicates that some activities will be undertaken to ensure the accuracy of environmental performance indicators in the near future. Firstly, systematic control paperwork will be developed in order to ensure that critical tasks are performed on schedule,

thereby leading to a more streamlined management of these activities. Secondly, records of all environmental improvements will be maintained in all areas of environmental responsibility to demonstrate compliance with regulations and effective operations. Thirdly, each hotel will establish and maintain documentation for the identification, maintenance, and handling of all records.

- **Hotel building facilities and sizes – need to compare performance with similar building facilities and size**

The findings from evaluating documents and archival records reveal that water performance had been compared between the hotels without selecting similar types of hotel building of similar size. The correction activity is to compare environmental performance indicators with a more similar hotel building in future years. Despite an organisation's best efforts, the potential and opportunity to improve environmental performance still exists. Thus, establishing a corrective action process to enable them to adapt to comparing more similar sizes and categories of hotel merits special attention and is a critical part of a successful EM programme.

- **Budgetary control – need to relate budgetary control to environmental investment decisions**

The findings regarding investments in resource saving appliances suggest that there has been no budget set for improving environmental performance in the participating hotels' operations. The budget is only set at the head office level for building new hotels or refurbishing hotels. According to the head office ED, the budget was negotiated at hotel level in the year 2005 because they realized that budget control that focuses on the costs of environmental protection without highlighting cost cutting could sometimes contradict the management aim of enhancing the organisation's strategy and objectives.

- **Monitoring system – need to make improvements in the monitoring and measurement systems**

After identifying problems with monitoring water consumption and costs, several actions were undertaken in 2004 in order to improve the monitoring system. Firstly, in order to standardize the hotel utility bills from different regions the regional office collected all the utility bills and negotiated utility prices with the respective suppliers. It was found that most hotel utility bills were collected monthly instead of periodically (three monthly or six monthly), but elements of the utility bills were still variable due to the different suppliers' policies. Secondly, the environmental performance indicator of utility consumption and cost per guest was developed in 2004 in order to provide another dimension of improved performance. Thirdly, a separate document on "environmental performance" was developed in 2004 in order to control EMPs that would help hotel organisations to improve their bottom line. Moreover, experts have been invited to assist the case study hotel group in improving their monitoring system of EMPs.

5.3 Interviewees' commitment to and responsibilities for EM

This section involves two main areas: interviewers' commitment levels and responsibilities. These two elements are integrated with each other and it has been found that interviewees at the top management level tend to have high levels of commitment toward the implementation of EM programmes. In addition, different perceptions of and attitudes to environmental issues were affected by interviewees' responsibilities at head office level, regional level, and hotel property level.

5.3.1 Manager's commitments (time and capital investments)

The aims and priorities of all organisations differ and the importance of the environment to those organisations will also vary. Despite these differences, the most successful EMPs will be found where top management commitment exists, because this facilitates the adoption of environmental policy and allows managers' commitment to translate into responsibility and action. This commitment should

enable time, finances and other resources to be allocated to the EM. Ultimately, all interviewees are willing to help their organisation to develop a better business performance that seeks to create opportunities for both business and the environment. Most of them are committed to giving their time to EM programmes if there are financial benefits in return. In addition, they do not want to be criticized for developing environmental policy for marketing purposes; instead, they want to make their organisation more publicly accountable, which is the essential basis for environmental improvement, responsibility and action within the organisation. In particular, the head office ED strongly believes that the efforts of the organisation will demonstrate the growing shift in corporate environmental thinking from a mindset in which EM is viewed primarily as compliance with regulation to one that includes it as an overall part of strategic management, affecting decisions on future procurement and technology.

Most interviewees talk about two very important elements in terms of their commitment. One is the time investment and the other is capital investment. In reality, the majority of interviewees find difficulties in ensuring both time and capital commitment are given because time is very important to business. Several interviewees mention their time is limited compared with the tasks they have to do. Interviewees approach EM in a number of alternative ways because some view EM solely as a cost and do not perceive it as an opportunity. With that perception in mind, those interviewees would not take up an opportunity by investing in more efficient appliances. However, some interviewees might actively seek to develop opportunities as a cost saving measure and allocate them capital investment. In order to formalise EMPs among individual hotels, the head office ED comments that he is directing his efforts on environmental issues at many levels. A committee of managers will be established in the near future to oversee the organisation's environmental policy and performance. It is expected that the committee will meet at least twice a year to look at a number of things that are occurring differently from previous practices. Also, the committee will create an arena where hotels can facilitate better environmental performance, because it will motivate managers to examine all of their hotels' usage levels of certain resources on a monthly or quarterly basis. Then the regional ED will go through these with hotel GMs and FCs in more detail and investigate why there are variances. It is believed that all

managers are willing and committed to improve EMPs.

However, capital investment could be a fast way of improving environmental performance, e.g. capital investment in more water or energy efficient appliances could be the best solution to reducing resources used, which would in turn reduce costs. The FC of H1 indicates that the hotel is usually given a miscellaneous capital budget and it is down to the GM how that money gets spent. If it is spent on environmental things, then it will be easier to get signed off, and he further pointed out that obviously the money they spend should enhance revenue or reduces costs. However, the head office ED argues that it is very expensive to initiate something that is going to make water usage more efficient and it is very difficult to control the water usage if hotel employees are not committed to changing their practice in some way; thus, investment in water or energy efficient equipment would not create the best EMPs. However, as the fastest way of reducing resource consumption without wasting too much time, ensuring the commitment of employees, the case study hotel group has concentrated on investment in newly opening new hotels, from learning about existing hotels' EMPs and identifying potential improvement areas. Therefore, it is expected that newly opening hotels are more efficient in the resources used than the existing hotels. This is confirmed by the GM of H2, who claims that, most of the time, the hotel is fairly efficient because of the way the property was built solely with efficiency in mind, in order to save costs.

After all, the cost motive is the most important factor driving the hotel business to implement EM programmes and especially to invest money in equipment or appliances. This section may be concluded by the statement of the UK regional ED:

"we do review the way we do our business, with both environmental issues and financial pressure in mind. I think that is a huge cost benefit; sometimes it can be expensive to initiate using water efficient appliances, but sometimes you need to change around your systems of management to create a cost saving opportunity. Obviously, if we can reduce utility bills by being more clever about how we do this and by pursuing whatever practices that we can, we have a cost saving."

5.3.2 Interviewees' responsibilities for EM programmes

Each employee should be clear about why they are carrying out environmental responsibilities. It is particularly important for EM to receive adequate time and attention from employees, and not just be placed at the bottom of their priorities. The majority of interviewees with responsibility for environmental matters have assumed their environmental duties as part of their existing job, but a number of FCs confine environmental responsibilities to the hotel GM and even to the head office ED. It is important to note that the effective operation and controlling of environmental performance is not dependent on top management alone but is an organisation team effort. Management has the most important role because it is responsible for allocating both financial and human resources to support the programme. For example, the head office ED comments that the front line management operates the daily business; the research and development division provides the information on environmental costs of products under development; and some external experts or consultants might help hotels to assess the effects of environmental laws and regulations, and estimate the business's environmental liability. The findings from analysing documents suggest that there is no detailed written document for allocating environmental responsibilities within the case hotel group, but the head office ED claims the organisation assigns all environmental responsibility to himself and that he reports directly to the organisation's board or to board members. Also, he argues that, in each operation, local management is accountable for the implementation of EM programmes. The hotel GM, with assistance from their FC, is also accountable for compliance with all of the laws and regulations pertaining to the environment.

From the discussions with interviewees, most of them are aware of their main responsibilities in the implementation of EM programmes and believe that the hotel group is trying hard to become environmentally friendly, but that it takes time. For example, the GM of H3 indicates that they are creating a "green committee", which will consist of leading personnel from each department with the aim of working to reach maximum environmental benefits combined with minimum operational costs. Also, the FC of H6 notes that the regional office will collect all utility bills every month together with occupancy rates in order to measure and

compare among hotels. Then, the results will be sent to each hotel in order to correct or improve environmental performance. Basically, the GM and FC at hotel level do not know what their hotel group is planning about EM programmes. Most of them are not discussing EM for the moment, but the head office ED is trying to set up a channel that will help communication on EM go smoothly. For instance, a committee is under development at the regional level and then in the individual hotels, and it is expected that this committee will communicate better across the different levels within the participating hotel group. Based on the discussions with all interviewees at different levels, table 5.4 summarizes the main responsibilities of key personnel for the implementation of EM programmes as discovered during interviews.

5.3.3 Training programmes and incentives vs employee participation

All employees are expected to be put through a formal training programme to improve the communication of EM in order to gain better results in practice. As the GM of H5 indicated, it is clear that a hotel will produce waste in many ways, and training educates employees in how to manage hotel resources, such as water and energy. Hence, the effective implementation of EM programmes could change organisation processes and ongoing. motivation and training are keys to successful EM.

Unfortunately, the hotel group does not have a formal training programme for implementing EM programmes in the UK-based hotels, but each participating hotel property has integrated environmental issues into their daily training programmes; there is a variable standard of training on environmental issues. For example, H3 has departmental managers train their own employees about environmental issues, while H8 has their human resource manager develop a more formal training programme to train hotel employees. In addition, the FC of H8 reveals that although the hotel does not have a separate training programme for EM, they have an internal committee to investigate things in terms of efficiency. This committee consists of the hotel general manager and financial controller who look to see if there are any savings to be made in daily business practice.

Table 5.4: The main responsibilities of interviewees

Positions	*Main responsibilities*
Head Office's environmental director	- To develop environmental action plans; - To be responsible for environmental management programmes at all the Group's hotels around the world; - To communicate environmental goals and results with shareholders and top management;
Regional environmental directors	- To be responsible for environmental management programmes at the regional hotels; - To communicate environmental goals and results between the head office environmental director and hotel general mangers;
Regional general manager	- To be responsible for environmental management programmes in each region; - To communicate environmental information between regional office and hotel property hotel level;
Regional financial controller	- To collect water bills from each hotel in their region and measure all relevant information then report the results to the head office - To report the financial information to the regional GM and hotel financial controllers;
Hotel general managers	- To be responsible for environmental management programmes at each hotel; - To communicate environmental goals and results between the regional environmental director and hotel employees;
Hotel financial controllers	- To record and monitor the cost and consumption from water, energy and waste bills in each hotel; - To report the results of EM programmes regularly to the hotel general manager;

Source: Developed according to organisational documents and interviews (2004 - 2006)

Although there is no standard training programme for EM, each interviewee is aware that one of the most critical elements of improving environmental performance is the adoption of a training programme in order to develop a new environmentally aware culture throughout the hotel organisation. Nevertheless, there are different views of training among interviewees: for instance, the Head office ED emphasises that the successful implementation of EM programmes at the fundamental level of operations could catalyze a broader culture change in the organisation and have the value of encouraging the participation and cooperation of employees and management in wisely using hotel resources such as water and

energy. He further adds that the training programme, which is planned to start in the near future, is expected to encourage an understanding of the issues, involving employees through developing an understanding of their roles and responsibilities in the implementation of EM programmes, in things such as training them to be conscious of whether any pipes are leaking or taps are left on or dripping.

However, interviewees at the hotel property level doubt the effectiveness of the training programmes. For example, the GM of H1 notes that there needs to be a concrete effort and a willingness to give it a try, with interest among the employees at the hotel property level, because the worst thing is that EM programmes are not going to be done properly if the employees are not behind the committee in the wish to undertake them. This idea is supported by the statement of the FC of H1, who expresses the opinion that low employee involvement in implementing EM programmes is a major problem limiting successful practices, because most employees easily lose their focus on implementing EM programmes once they discover that it does not directly affect them and in fact creates more work. Moreover, the GM of H2 indicates that they (GM, FC, and maintenance engineer) have done some work with hotel facilities to reduce resource usage, but, other than that, they think there is no other real way that they could save water except to educate and train employees. With these worries of low employee involvement, the GM of H8 argues that many barriers to change in EM are people issues rather than technical ones, and emphasises the importance of the involvement of people when implementing EM programmes, especially on-site people rather than just corporate employees. Similarly, the GM of H7 supports the idea of the GM of H2, saying that, "*It is important to link financial people, engineering employees, and some experts with each of them having different thinking about things, so it is critical to get different perspectives from their knowledge*".

5.4 Summary from interviewing managers

The findings from interviews imply that managers do not consider flexibility in their work and most managers are struggling with complexity in discussions about their

role in determining business strategy and environmental related objectives. The majority of managers link ideas of securing the legitimacy and survival of the Organisations and not understanding problems and recognizing areas for integrating environmental issues into business management. Therefore, the important issues for the case study hotel group are the extent to which managers conceive the need for change; and how they continue to balance the elements of profit generation and environmental protection. Under these circumstances the purpose of management is to generate profit and maintain desired relationship with stakeholders, but communicating solutions of EMPs to a range of stakeholders has been neglected. The discussions with interviewees at three different levels led to similar findings about the communication and measurement of EM namely that it is a great challenge to involve everyone in making joint decisions and resolving conflicting desires. Most importantly, it should be noted that effective communication and measurement of EM is only at the top management level, and GMs and FCs at the hotel property level have not really communicated much with the top management level about the results of EM. Most of the hotel GMs and FCs only follow what the organisation has previously decided on. As a result, hotel GMs at the hotel property level have no power of decision-making in the system of measuring EM programmes and this one-way communication, or top to bottom communication, could result in missed opportunities to manage the hotels' resources in a more efficient manner.

Chapter Six Findings from Evaluating Archival Records and Water Bills

The information in this chapter is complementary and aims to provide quantitative data which can be compared with qualitative data (documents and interviews) in order to identify whether the participating hotel group's water management, has contributed to the improvement of environmental performance. This chapter is therefore structured into three sections. The first section assesses preliminary findings of general head office archival records in order to explore how well the hotel group is implementing EM programmes overall. The second section concentrates on the evaluation of water bills in the eight UK based hotel properties in order to obtain an insight into how individual hotel managers monitor water consumption and costs through variable water billing periods. In the third section, water benchmarks and variance analysis techniques are utilized in order to acquire a greater insight into how efficiently the hotels are performing in terms of water cost and consumption.

6.1 Findings from group level (based on preliminary analysis of general head office archival records)

The monitoring of utility consumptions and costs is a complex process and the participating hotel group did not undertake a benchmarking system of monitoring utilities. Individual hotel properties did not provide detailed data, and furthermore the head office and regional office did not collect and update data from every individual hotel property in order to make comparisons. Moreover, there is no information system or computer software system in the participating hotel group to support the monitoring of utility consumptions and costs. However, the hotel group is aware of the importance of implementing EM programmes, e.g. water management, and is interested to look into these environmental issues in order to reduce operating costs. Compared to other international hotel groups (e.g. Accor or Razidor), the participating hotel group is in the early stages of developing EM programmes and implementing EMPs. Moreover, its investment in efficient appliances is only in newly opened hotels due to a business strategy of selling inefficient hotel properties. Nevertheless, the hotel group monitored water usage

in the seven newly opened hotels after 2001 and results demonstrated the intention for the hotel group to work towards the reduction of water consumption and costs. For example, table 6.1 and figure 6.1 illustrate the reduction of water consumption and costs per sleeper night in seven newly opened hotel properties after 2001. Moreover, table 6.2 lists relevant activities in relation to environmental issues after the year 2001 and environmental activities identified in this section are used for the demonstration of how those environmental activities affect environmental performance.

Table 6.1: Years of opening and water consumption and cost per sleeper night in the seven newly opened hotel properties after the year 2001

Hotel properties	*Year of opening*	*Water consumption per sleeper night (m^3)*	*Water cost per sleeper night ( )*
*New opening hotel **A***	Mar. 2001	0.235	0.246
*New opening hotel **B***	Jan. 2002	0.21	0.242
*New opening hotel **C***	Feb. 2003	0.198	0.236
*New opening hotel **D***	Dec. 2003	0.192	0.231
*New opening hotel **E***	Mar. 2004	0.183	0.223
*New opening hotel **F***	Jan. 2004	0.174	0.21
*New opening hotel **G***	Nov. 2005	0.171	0.20

Figure 6.1: Water consumption and cost per sleeper night in the seven newly opened hotels after 2001

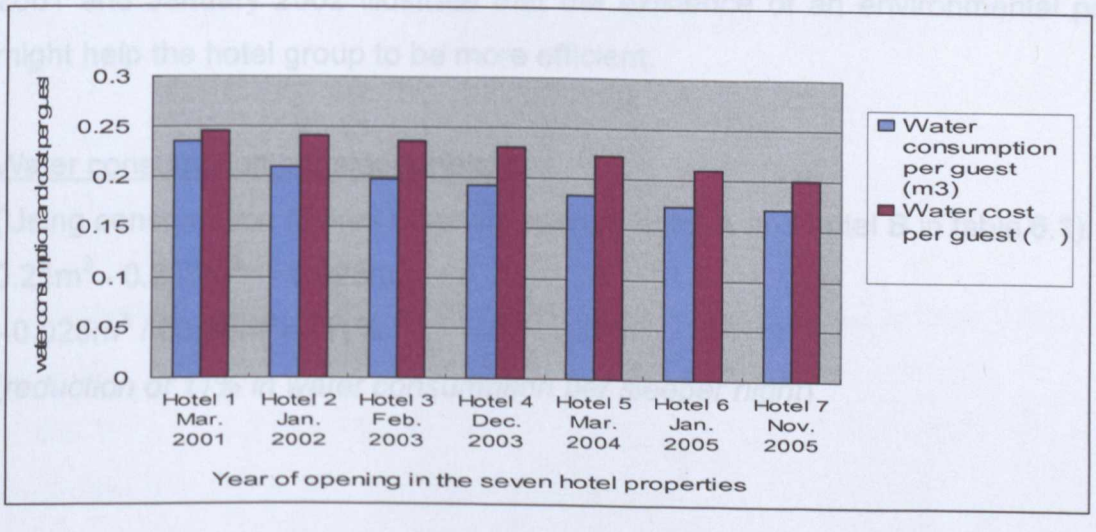


Table 6.2: Relevant environmental activities established after 2001 in the participating hotel group

Years	*Relevant environmental activities established*
Jan. 2001	development of environmental policy
Jul. 2002	appointment of environmental director
Dec. 2002	development and implementation of EM programmes
Feb. 2003	development of environmental action plan
Sept. 2003	involvement of external consultants
Jul. 2004	first attempt at developing and measuring environmental performance indicators (e.g. water and energy indicators)
Jul. 2005	formal monitoring system (e.g. application of IH benchmarks)

According to the information in table 6.1, table 6.2, and figure 6.1, several relevant environmental activities that have been undertaken to improve environmental performance are considered effective. The following calculations demonstrate how environmental activities influence reduction of water consumptions and costs and how much they have been reduced by.

Year 2001- 2002:

The difference in water consumption and cost between hotels **A** and **B** in March 2001 and January 2002 illustrate that the existence of an environmental policy might help the hotel group to be more efficient.

Water consumption per sleeper night:

(Using consumption figures of newly opened hotel **A** and hotel **B** in table 6.1):

$0.21m^3 - 0.235m^3 = -0.025m^3$;

$-0.025m^3 / 0.235m^3 = -11\%$

(*reduction of 11% in water consumption per sleeper night*)

Water cost per sleeper night:

(Using cost figures of newly opened hotel **A** and hotel **B** in table 6.1):

0.242 – 0.246= - 0.004;

- 0.004 / 0.246 = -1.6%

(*reduction of 1.6% in water cost per sleeper night*)

Year: 2002 – 2003:

The difference in water consumption and cost between hotels **B, C,** and **D** in 2002 and 2003 illustrates that the existence of an environmental director and the planning of EM programmes might help the hotel group to be more efficient.

Water consumption per sleeper night:

(Using consumption figures of newly opened hotel **B** and hotel **C** in table 6.1):

$0.198m^3 – 0.21m^3 = - 0.012m^3$;

$- 0.012 m^3 / 0.21 m^3 = - 5.6\%$

(*reduction in water consumption of 5.6% per sleeper night*)

(Using consumption figures of new opened hotel **C** and hotel **D** in table 6.1):

$0.192m^3 – 0.198m^3 = - 0.006m^3$;

$- 0.006m^3 / 0.198m^3 = - 3.3\%$

(*reduction in water consumption of 3.3% per sleeper night*)

Water cost per sleeper night:

(Using water cost figures of newly opened hotel **B** and hotel **C** in table 6.1):

0.236 – 0.242= - 0.006;

- 0.006 / 0.242 = -2.5%

(*reduction of 2.5% in water cost per sleeper night*)

(Using water cost figures of newly opened hotel **C** and hotel **D** in table 6.1)

0.231 – 0.236= - 0.005;

- 0.005 / 0.236 = - 2.2%

(*reduction of 2.2% in water cost per sleeper night*)

Year 2003 – 2004:

The difference in water consumption and cost between hotels **D, E,** and **F** in 2003 and 2004 showed that the existence of an environmental action plan and the involvement of external experts might help the hotel group to be more efficient.

Water consumption per sleeper night:

(Using consumption figures of newly opened hotel **D** and hotel **E** in table 6.1):

$0.183m^3 – 0.192m^3 = - 0.009m^3$;

$- 0.009m^3 / 0.192m^3 = - 4.7\%$

(*reduction of 4.7% in water consumption per sleeper night*)

(Using consumption figures of newly opened hotel **E** and hotel **F** in table 6.1):

$0.174m^3 – 0.183m^3 = - 0.009m^3$;

$- 0.009m^3 / 0.183m^3 = - 4.9\%$

(*reduction in water consumption of 4.9% per sleeper night*)

Water cost per sleeper night:

(Using cost figures of newly opened hotel **D** and hotel **E** in table 6.1):

$0.223 – 0.231 = - 0.008$;

$- 0.008 / 0.231 = - 3.5\%$

(*reduction of 3.5% in water cost per sleeper night*)

(Using cost figures of newly opened hotel **E** and hotel **F** in table 6.1)

$0.21 – 0.223 = - 0.012$

$- 0.012 / 0.223 = - 5.4\%$

(*reduction of 5.4% in water cost per sleeper night*)

Year 2004 – 2005:

The difference in water consumption and cost between hotels **F** and **G** in 2004 and 2005 showed that the existence of an attempt at developing and measuring environmental performance indicators (e.g. water and energy indicators) might help the hotel group to be more efficient.

Water consumption per sleeper night:

(Using consumption figures of newly opened hotel **F** and hotel **G** in table 6.1):

$0.171m^3 - 0.174m^3 = -0.003m^3$;

$-0.003m^3 / 0.174m^3 = -1.7\%$

(*reduction in water consumption of 1.7% per sleeper night*)

Water cost per sleeper night:

(Using cost figures of newly opened hotel **F** and hotel **G** in table 6.1):

$0.20 - 0.21 = -0.01$

$-0.01 / 0.21 = -4.7\%$ (*reduction in water cost of 4.7% per sleeper night*)

Findings from analyzing archival records at the head office level and regional level show that the implementation of EMPs has potential to effect a reduction in water consumption and it may play a major role in enhancing a better environmental performance and reducing water cost. However, the role of accounting is seen by the case study hotel group as simply the provision of financial data and an interesting outcome of evaluating water consumption among various hotel properties is that managers did not think about accounting alternatives beyond those limited by the traditional accounting system. The evaluation of the accounting system in relation to environmental performance plays an important role in manager's strategic decisions and conversely, the potential exists for business environmental policy to influence management's accounting policy choices. Moreover, there is a first attempt to review the linkage between environmental performance and financial performance in the case study hotel group and the results reveal that they did not integrate accounting subdisciplines and apply accounting methodologies to the analysis of environmental performance. In sum, from the case study hotel group, accounting is reviewed as freestanding discipline divergent from EMPs, and independent of environmental strategy.

6.2 Findings from property level: evaluation of detailed water bills

The purpose of this section is to present a number of important findings gleaned

from assessing detailed water bills at the participating hotel properties.

6.2.1 Inconsistent billing period of water bills

It was found that there was no standard form for water bills in the participating hotel properties and findings suggest that different water billing periods cause difficulties in comparing water performance between the these hotel properties. For example, H1, H2, H3, H5, H6, and H8's water bills have different billing periods (e.g. 45 day billing period or 60 day billing period) and only H4 has a monthly water billing period that could match the monthly accounting system. Most participating hotel properties have estimated their monthly consumption by reading their meter, in order to obtain monthly water costs. This estimate is not necessarily completely accurate.

6.2.2 Not real costs of water consumption

Consequently, with the problem of variable billing periods and variable elements of the water bills, it is difficult to conclude as to whether the reduction of water consumption could reduce water cost overall. For example, the analysis of water bills for H2 and H5 reveals that the water supplier did not read the meter monthly and this made it difficult to record the real cost of water consumption because H2's financial controller had estimated water cost instead of recording accurate costs based on real water consumption. Thus, it seems that performance indicators would not be so accurate when measuring water performance against monthly sleeper nights, and occupied rooms. Similarly, managers inability to produce accurate figures might mislead them into making inappropriate decisions. Moreover, H7 did not have its water bills due to a flooding disaster that occurred in 2004, though financial controllers had been recording monthly water consumption and costs in 2002 and 2003; and water costs were estimated by the financial controller directly. Consequently, it is difficult to identify the real cost of water consumption because the financial controller did not calculate water cost based on real water consumption. In short, this study has found that the participating hotel properties did not produce real costs of water usage.

6.2.3 Different water suppliers lead to different prices

Although the participating hotel properties belong to the same hotel group, they are permitted to choose their own water suppliers according to their needs. Most discussions and decisions regarding working with suppliers occur in the regional office. Most hotel properties do not have the same water supplier; and since different water suppliers have different systems, there are different business practices in the eight hotel properties. Some incentives are offered to decrease water costs and additional advice on reducing water consumption is given by the hotel's water supplier. For example, Thames Water developed a self audit questionaire (see appendix 2) for their customers and offered a free prize draw in order encourage various users to complete this questionaire. By filling it in, the hotel gained awareness of the water used. Besides, Thames Water promoted a scheme called a "medium volume tariff" that brings savings to customers using between 20,000 and 50,000 m^3 of water each year. Similarly, Water Bristol offers an allowance if all surface water from the hotel property is drained to a soak away; and calculation of sewerage charges is more flexible than with other water suppliers because, for example, H2 could get a reduced charge if not more than 5% of its water supply is found to be returned to the sewer. Water Bristol has also developed guidelines to assist their customers in combating leakage from their pipes, with the aim of keeping leakage down to the standard level.

Although H4's water supplier, Severn Trent Water, added extra fixed costs and surface drainage costs, they also introduced a programme called the ECO20 Tariff for 2002 and 2003, and H4 reduced its costs by joining this programme. Using the peak (May-Sept) and off peak (Oct-Apr) tariff, H4 had a credit of £905 for the year 2002. Moreover, in order to manage resources more efficiently, Severn Trent has developed an approach to help their customers handle, treat, and dispose of waste and manage water supplies more efficiently. In spite of H8 having the same water supplier as H1, H2 and H5, H8 had an additional charge of VAT on water cost. Hence water price may be variable even if provided by the same supplier, and depends on negotiations with suppliers to get better prices.

6.2.4 Trend of increasing price of supplying fresh water and dealing with waste water (water price vs water cost)

It should be noted that the fixed charge for waste water is much more than the fixed charge for fresh water in some hotel properties and this could also be an important factor influencing reductions in water cost. For example, in H1, the fixed charge for fresh water is 49.31 (30 days) and waste water is 193.31 (30 days); and in H2, the fixed charge for fresh water is 23.25 (30 days) and waste water is 50.07 (30 days). Unlike H1 and H2, the fixed charge in H3 was only on fresh water. This fixed charge is 700 per year. The cost of waste water increased from 51.4 pence per cubic metre in December 2001 to 55.9 pence per cubic metre in May 2003; similarly, the fresh water cost increased from 77.4 pence per cubic metre in December 2001 to 85.4 pence per cubic meter in May 2003. H3 faced increased prices for both water and waste water from their water supplier, United Utilities. Moreover, there is a trend for prices of supplying fresh water and dealing with waste water to increase: the findings showed that in 2004 H1, H2, H3, H5, H6, H7 and H8 all experienced higher water prices than in previous years (see table 6.3).

Table 6.3: Comparisons of water and waste water prices between water suppliers for the years 2002 and 2004

Hotel	*Water supplier*	*Water Pipe size (mm)*	*2002 (pence) average*	*2003 (pence) average*	*2004 (pence) average*
H1	Thames Water	100	Waste:43.44 Water:61.21	Waste:43.69 Water:63.27	Waste:43.87 Water:63.27
H2	Thames Water	50	Waste:43.44 Water:62.21	Waste:43.69 Water:63.27	Waste:43.87 Water:63.27
H3	United Utilities	100	Waste:51.4 Water:77.4	Waste:55.9 Water:85.4	Waste:55.9 Water:85.4
H4	Severn Trent	42	Waste:48.2 Water:77.07	Waste:48.20 Water:77.07	Waste:48.79 Water:77.56
H5	Thames Water	50	Waste:43.44 Water:62.21	Waste:43.69 Water:57.89	Waste:43.87 Water:63.35
H6	Water Bristol	206 806	Waste:71.96 Water:69.45	Waste:98.92 Water:74.31	Waste:98.95 Water:74.58
H7	Thames Water	100	Waste:43.44 Water:62.21	Waste:43.69 Water:63.27	Waste:43.87 Water:63.56
H8	Welsh Water	325	Waste:43.44 Water:62.21	Waste:43.44 Water:62.21	Waste:43.56 Water:62.35

In sum, prices of supplying fresh water and treating waste water tend to be ever

increasing. H6's fresh water supply in particular increased from 69.45 pence to 74.31 pence, and the cost of treating waste water increased from 71.96 pence to 98.92 pence between 2002 and 2004. Therefore, negotiating with water suppliers can be an influential factor in bringing down water costs.

6.2.5 Water usage vs water cost

The findings suggest that although some hotel properties have reduced their water costs by reducing water usage, some have reduced water costs whilst retaining the same water usage and even increasing it. Table 6.4 summarizes water usage and cost per guest in eight hotel properties. H1 had very stable water costs over the years 2002 to 2004 and has reduced water cost per sleeper night by 4% (10 pence) while water usage per guest remained the same. Although water costs for usage increased for H2, the costs per sleeper night were successfully reduced by 9%, which means H2 saved 20 pence per guest. Unfortunately, water costs for H3 and H5 increased on both water usage and cost per sleeper night. H4 and H8 have investigated why their water usage increased from 2002 to 2004 although the costs did not increase.

Table 6.4: Percentage changes in water consumption and water cost per sleeper night from 2002 to 2004 in the participating hotel properties

	Water consumption (%)	*Water cost (%)*
H1	0 (no change)	- 4 (decreased 10 pence per sleeper night)
H2	+ 5 (increased 0.01 m^3 per sleeper night)	- 9 (decreased 20 pence per sleeper night)
H3	+12 (increased 0.02 m^3 per sleeper night)	+14 (increased 30 pence per sleeper night)
H4	+ 5 (increased 0.01 m^3 per sleeper night)	0 (no change)
H5	+ 5 (increased 0.01 m^3 per sleeper night)	+ 9 (increased 20 pence per sleeper night)
H6	- 3 (decreased 0.01 m^3 per sleeper night)	- 4 (decreased 20 pence per sleeper night)
H7	- 80 (decreased 0.24 m^3 per sleeper night)	-83 (decreased 25 pence per sleeper night)
H8	+14 (increased 0.02 m^3 per sleeper night)	0 (no change)

Further to this, it is very important to note that H6 and H7 have reduced not only water usage but also water cost; H7 especially reduced the cost significantly, by

25 pence per sleeper night. Thus, H1, H2, H4, H7, and H8 have reduced water cost successfully while water usage has increased; thus price could be a factor influencing water cost. In sum, the findings have revealed that increased or decreased water price could simply affect water cost as a whole. Therefore, reducing water usage could be a factor to bring down the water costs, as could better buying from water suppliers.

6.2.6 Lack of standard baseline of information for benchmarking water performance

Evaluation of EMPs depends on there being a baseline against which change can be measured. In general, baselines are established to provide a measurement of significant change over time, or between spatial areas at a particular time. The hotel group has developed baseline information for EMPs – energy and water management; however, measurement and comparison are based at the regional level (e.g. southern region against northern region) instead of on influential factors, such as hotel size and category. The hotel group did not develop a more meaningful standard for benchmarking their water performance and long term monitoring is lacking to screen out natural variability and establish reliability. Hence, an evaluation of the importance of current baseline information is hampered by the natural variability of hotel conditions. Moreover, this study found where benchmarking or monitoring performance over time is carried out, but it is important to note that indicators from different periods and different processes are not developed and defined in the same way. This issue of different measuring processes for environmental performance arises because the hotel group is learning how to improve its environmental performance by trying several techniques and working with different professionals and associations.

6.2.7 Lack of techniques or systems for reporting environmental related practices

Most reporting and measuring activities of EMPs are on the regional basis and individual hotels' GMs and FCs did not report on environmental performance, but simply recorded data in a spreadsheet and sent it to the regional office. It is the

regional office's responsibility to measure and benchmark utility data to produce performance indicators and report to head office. Then head office reviews and corrects, according to goals set and the company's objectives. The environmental director from head office evaluates performance with the board of directors and makes decisions regarding the modification of tasks that will improve environmental performance. The hotel group did not use any system or technique to report and communicate environmental performance. However, the initial review of environmental performance raised the awareness of some individual hotel managers about the importance of looking into their system of monitoring business practices. For example, since H3 started to record water related figures and water consumption and cost per guest in 2004, these have dropped by fifty per cent compared with 2002 and 2003, which is seen as a great motivator by H3 to continue in the implementation of EM programmes.

6.2.8 Lack of monetary information about the efficiency of investing in advanced technologies

The adoption of new technology often implies an improvement in environmental performance even if the investment is made without considering environmental issues. When accounting for environmental expenditures or investments hotels are faced with the decision as to whether environmental factors should be considered in expenditure, or whether expenditure will be undertaken purely for economic reasons. However, no recording of cost related information on environmental expenditure was presented in the participating hotels' documents. This caused difficulty in accounting for environmental expenditures with common criteria, and in establishing a relationship between environmental expenditure and environmental performance. As referred to earlier, it was found that all participating hotel properties have installed more efficient water appliances, but the most efficient appliances were designed and installed in newly opening hotels. Moreover, there was no detailed information recording water usage in relation to the installation of these efficient appliances. Lack of information on investment in these efficient appliances meant there was no insight into the relationship between investment and reduction in water usage and water cost.

6.2.9 Hotel building and installation of water efficient appliances

By comparing building conditions in the eight hotel properties, three star rated hotels with new buildings had lower water consumption than that of four star rated hotels with old buildings. This study identifies that newly built hotel buildings have more water efficient appliances than old hotel buildings. Consequently, water consumption in new hotel buildings is lower than that in old hotel buildings. Hence, it is implied that building age is a critical element influencing managers' decisions about investing in efficient appliances.

6.2.10 Need to develop more accurate performance indicators

The assessment of a number of performance indicators, e.g. water consumption per day, water consumption per available room, water consumption per occupied room, water consumption per sleeper night, suggests that there is no meaning in using indicators of water consumption per day and water consumption per available room; it is more meaningful to use water consumption per occupied room and water consumption per sleeper night. In addition, water consumption per occupied room is less accurate than water consumption per sleeper night and these two performance indicators show different results. For example, H3 has the lowest water consumption per sleeper night, while H2 had the lowest water consumption per occupied room among the eight hotel properties. Therefore, it is believed that the use of sleeper night or occupied room as the chosen performance indicator could produce different results.

Moreover, it is believed that number of sleeper nights (or room occupancy) could be a factor influencing the efficiency of water performance, as the public areas and back office consume a certain amount of water whether the hotel has high or low occupancy. For example, from table 6.2, H2's water consumption has increased 5% over the last two years (2002 -2003) while the number of sleeper nights has decreased over the last two years. This increased water consumption per sleeper night could be the result of the decrease in room occupancy and sleeper nights. Therefore, this suggests that a hotel with low occupancy tends to have higher water consumption per sleeper night than those with high occupancy.

Besides, there is a wide range of different sizes of meeting rooms among the eight hotel properties; H4 has the biggest meeting capacity and water consumption per sleeper night is the highest of the three star rated hotels. Therefore, it is suggested that the capacity of meeting rooms could be an important factor influencing the volume of water consumption, especially since the hotel group did not count conference guests as sleepers while developing water performance indicators.

6.2.11 Water pipe size

Some managers have complained that water pipe size could be a factor influencing the volume of water consumption. For example, the water pipe size of H1 is 100 mm and the FC complains about this, due to its possible influence on the efficiency of water usage. It is worth noting that the water pipe size is 42 mm in H4, relatively small compared to the standard water pipe size (100 mm). Moreover, H6 is the only hotel to have two water meters; all the other hotels have only one. H6 has relatively large water pipes – one is 206 mm and the other is 806 mm – and this could have a negative effect on water consumption. Most importantly, comparing water pipe size with water consumption per sleeper night in H4 and H6 shows that H4 has relatively lower water consumption per guest than H6. Hence, it is believed that water pipe size could be a factor influencing the volume of water consumption.

6.3 Findings from property level: accounting analysis of detailed water bills

Findings from company documents show that the hotel group has progressively improved environmentally even though it is in the early stages of implementing EMPs. However, this section aims to use accounting techniques from literature to analyse whether the hotel group is efficient in its water use. Hence, water performance indicators have been developed from water bills which were collected from eight participating hotel properties (see appendices 14, 15, 16, 17, 18, 19, 20, and 21), and three water benchmarks and variance analysis are utilized to identify how efficient they are and how much they can save from the

standard.

6.3.1 Comparison between water performance and existing water benchmarks

In order to obtain a more objective view of how efficiently the eight participating hotel properties have used water, this study utilizes three water benchmarks, which have been evaluated in the literature review, to identify the efficiency of water performance – Green Hotelier's water benchmark, that of water supplier (Thames Water), and a competitor's water performance (Accor group). However, it is important to note that managers should be conscious in using external benchmarks to measure their performance that some benchmarks are not up to date or have considered different variables. Since eight hotel properties have participated in this project and the measurements of water performance are similar, it was decided to use only one hotel to demonstrate the steps in measuring water performance.

- **Green Hotelier's water benchmark**

This study found that the participating hotel group used fairly high water consumption figures in line with the Green Hotelier water benchmark aimed at encouraging managers to look into EM programmes. This section uses H1's information on water usage and costs in 2002, 2003, and 2004 to compare with Green Hotelier's water benchmark. The water benchmark from Green Hotelier is measured in units of litres per sleeper night. H1 consumed $0.21m^3$ per sleeper night for the year 2002. With the volume conversion ($1m^3$ = 1000 litres), H1 consumed 210 litres per sleeper night. Similarly, H1 consumed $0.22m^3$ which equalled 220 litres per sleeper night, for the year 2003; and $0.21m^3$, equalling 210 litres per sleeper night for the year 2004. Compared to Green Hotelier's water benchmark, H1 fell into the category of good performance, which means that H1 is very efficient in its water performance.

Year 2002: $0.21m^3$ / sleeper night x 1000 = 210 litres / sleeper night

Year 2003: 0.22m^3 / sleeper night x 1000 = 220 litres / sleeper night
Year 2004: 0.21m^3 / sleeper night x 1000 = 210 litres / sleeper night

The standard consumption in Green Hotelier's water benchmark is fairly high and it has not been updated since 1998; however, it is not the case that the Green Hotelier benchmark is the only available information for hotel organisations. This study has also employed Thames Water's water benchmark, developed specifically for hotel Organisations.

- **Thames Water benchmark**

Thames Water's water benchmark was calculated based on m^3 per bed space per year. H1 consumed 21,315m^3 in the year 2002 and this can be divided by the year's total bed spaces - 167,170. H1 consumed around 0.128m^3 per bed space per day, multiplied by 365 days; so H1 consumed 46.72m^3 per bed space for the year 2002. Similarly, for the year 2003, total water consumption was 21,397m^3 and, by the same formula, H1 consumed 46.72m^3 per bed space for that year. H1 consumed 19,920m^3 for the year 2004, equal to 43.44m^3 per bed space for the year.

Year 2002:
21,315m^3 / 167,170 bed spaces = 0.128m^3 / bed space
0.128m^3 x 365 days = 46.72m^3 / bed space / per year

Year 2003:
21,397m^3 / 167,170 bed spaces = 0.128m^3/ bed space
0.128m^3x 365 days = 46.72m^3/ bed space / year

Year 2004:
19,920m^3/ 167,170 bed spaces = 0.119m^3 / bed space
0.119m^3 x 365 days = 43.44m^3 / bed space / year

After evaluating water performance indicators and comparing with Thames

Water's benchmark, it was concluded that H1 performed very well in its water use. However, there was a slight increase in water consumption and costs from the year 2002 to 2003; according to the Thames Water benchmark, this provides an opportunity for H1 to investigate the increase in order to prevent unnecessary waste of water and extra costs on their water bills. However, it is important to reveal that Thames Water did not consider variations such as different sizes and facilities of hotel Organisations, and room occupancy and number of sleeper nights; so it is suggested that hotel Organisations should be cautious while applying Thames Water's water benchmark. In addition, it is important to compare with peers in order to identify how well they are performing in their water use and managers should have the knowledge to choose hotels with similar characteristics and the same level of facilities when comparing water performance with competitors - otherwise, the results will not be comparable due to differences in background.

- **Competitor's water benchmark (Novotel brand)**

This study has chosen the Accor group (three star and four star hotels) as the competitor against which to benchmark water performance, due to the availability of data and the company's strong credibility in EMPs (see literature review). The water usage in the three star rated hotels was compared with the Novotel brand and four star rated hotels were compared with the Sofitel brand. The main feature of Novotel is spacious rooms for individuals, couples, and even entire families. Novotel is located mainly in business districts and thriving commercial areas of major cities and is now aiming to expand into city centres. In this sense, the background of Novotel branded hotels is similar to the three star rated participating hotels. On the other hand, Sofitel is the premium hotel brand of Accor and has established a top-tier position in the highly competitive deluxe hotel industry which is similar to the four star rated participating hotels.

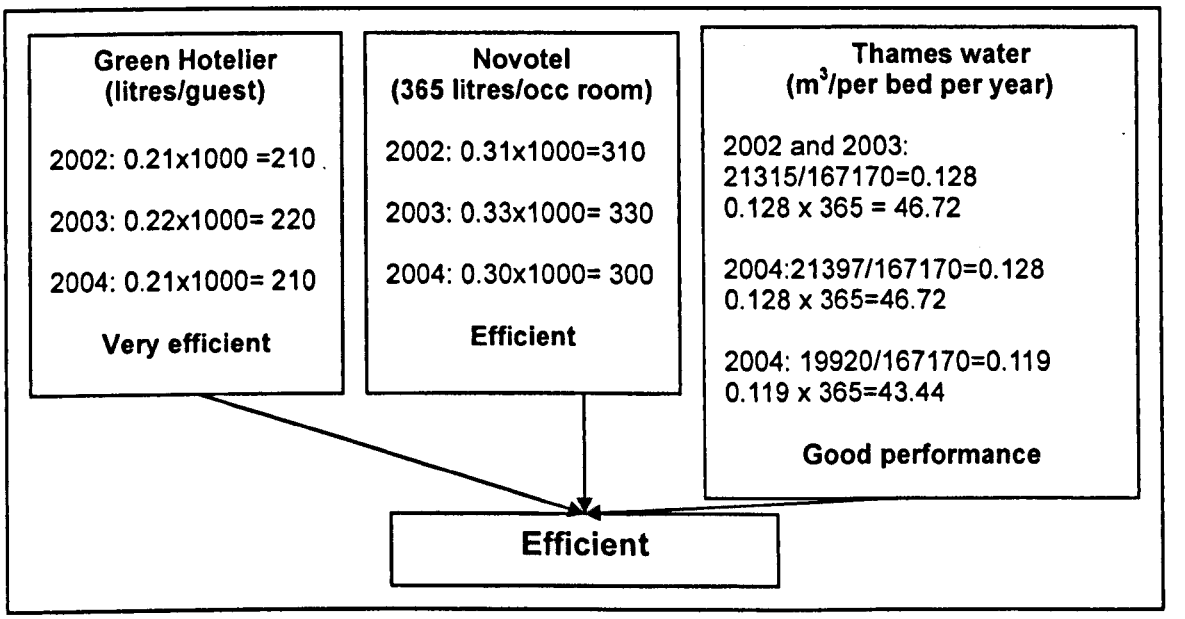
The water benchmark of Novotel in 2002 was 365 litres per day per occupied room. H 1 consumed 0.31m^3 per occupied room in the year 2002, 0.33m^3 per occupied room in the year 2003, and 0.30m^3 per occupied room in the year 2004.

With the volume conversion ($1m^3$ = 1000 litres). H 1 consumed 310 litres of water in 2002, 330 litres in 2003, and 300 litres in 2004; H 1 is therefore efficient compared to its competitor's water consumption in 2002.

Year 2002: $0.31m^3$ / occupied room x 1000 = 310 litres / occupied room
Year 2003: $0.33m^3$ / occupied room x 1000 = 330 litres / occupied room
Year 2004: $0.30m^3$ / occupied room x 1000 = 300 litres / occupied room

As result, H1 is efficient in comparison with three benchmarks (see figure 6.2) and the calculations are the same for other hotel properties: appendices 22, 23, 24, 25, 26, 27 and 28 show all the calculations and table 6.5 lists the results of water usage in the participating hotel properties compared against the three water benchmarks (see appendix 1). The findings indicate that apart from H 7, the hotels are managing their water efficiently and H 6 could improve its water performance in the future through comparison with the three water benchmarks. In addition, this study attempts to make the comparisons on an internal, competitive, and industry-wide basis in order to identify how the group is graded and what improvements are needed from three perspectives. The hotel group is thus efficient by comparison with three water benchmarks.

Figure 6.2: Comparing water consumption with three water benchmarks



However, each benchmark has a different unit of measuring water performance

and there are different performance indicators which represent different meanings. For example, water consumption and cost per sleeper night; or water consumption and cost per occupied room; or water consumption and cost per bed space. With improvement goals, managers could use these different benchmarks to develop an action plan to achieve an overall business objective. However, although these water benchmarks could assist managers to identify if they are efficient or not in their water use against "set up standards" according to business objectives, managers would not know how efficient they are and how much they could save without the application of accounting techniques. Currently, benchmarks are developed based only on the consumption measurement and neglect the cost measurement. Thus, the next section attempts to employ variance analysis in order to identify potential savings from evaluating water performance and obtaining more detailed information about water usage and water costs separately.

Table 6.5: Analysis from Applying three water benchmarks

Hotels	*Green Hotelier (litres/guest)*	*Competitor (litres per occupied room)*	*Thames water (m3 per bed space)*
H 1	Very efficient	Efficient	Good performance
H 2	Very efficient	Very efficient	Excellent performance
H 3	Very efficient	Very efficient	Excellent performance
H 4	Efficient	Efficient	Good performance
H 5	Very efficient	Very efficient	Excellent performance
H 6	Efficient	Efficient	Poor performance
H 7	Not efficient	Not efficient	Poor performance
H 8	Very efficient	Very efficient	Excellent performance

6.3.2 Application of standard costing variance analysis techniques

One of the main reasons why Organisations use variance analysis is that it allows management to plan for expected costs incurred in processing a product or

providing a service. Additionally, variance analysis identifies variances (differences) between expected and acutal costs so that appropriate action can be taken. Therefore, this study collected three years water consumption and cost figures (2002 -2004) from the participating hotels in order to isolate water "usage" (consumption) from water "price" and determine the impact of these two elements on water cost. This is the first (known) attempt to use variance analysis to analyze water costs. The method has been applied using six steps as illustrated in figure 6.3.

Figure 6.3: adapted formulation of standard cost variance analysis

Step 1 - (A): Actual usage x Actual price = Actual price of actual usage (actual cost)
Step 2 - (B): Actual usage x Standard price = Standard price of actual usage
Step3 - (C):Standard usage x Standard price = Standard price of standard usage (standard cost)
Step 4 - (D): (A) – (B) = Price variance
Step 5 - (E): (B) – (C) = Usage variance
Step 6 - (F): (A) – (C) or (D) + (E) = Total cost variance

Source: Harris and Hazzard (1992)

Figure 6.3 demonstrates the calculations in six steps for the years 2002, 2003, and 2004 using the data from H1 (see appendix 14) and presented in table 6.6 along with the other seven hotel properties (from page191 onwards and appendices 15,16, 17, 18, 19, 20, and 21)

The year 2002

➢ Step 1: (A) Calculation of actual water price of actual water usage

Total water usage (21,315m^3) in 2002 multiplied by water price (0.24) per sleeper night in 2002 and actual cost of actual water usage is 5,116.

actual total water usage X actual water price per = actual water price of

in 2002		sleeper night in 2002		actual water usage
21,315m^3	X	0.24	=	5,116

➢ **Step 2: (B) Calculation of standard water price of actual water usage**

It is not easy to identify an appropriate standard of water usage and water price for the hotel industry. There is a lack of a standard for water price in the hotel industry; thus, after discussing with the environmental director of the participating hotel group, it was decided to use the average of water price (0.32) per sleeper night in 2001 because the hotel group started to implement EM programmes then. Hence, total water usage in 2002 (21,315m^3) multiplied by standard water price (0.32) per sleeper night in 2001 and standard water cost of actual water usage in 2002 is 6,821.

total water usage in 2002	x standard water price	= standard water price of actual water usage
21,315m^3	x 0.32	= 6,821

➢ **Step 3: (C) Calculation of standard water price of standard water usage**

After reviewing existing standards of water usage from Green Hotelier, competitors, and water suppliers, this study decided to use the Green Hotelier standard of water usage because the participating hotel group is improving its water performance according to this standard. Therefore, the standard water usage is calculated by using total sleeper nights in 2002 (103,820 sleeper nights) multiplied by Green Hotelier's standard of water usage (0.44m^3 per sleeper night) and then by standard water price per sleeper night (0.32 per sleeper night in 2001, a figure given by the environmental director), so standard water cost of standard water usage is 14,618.

standard water usage (total sleeper nights x green hotelier)		X standard water price	= standard water price of standard water usage
103,820	x $0.44m^3$	X 0.32	= 14,618

➢ **Step 4: (D) Calculation of water price variance**

The difference between actual water price of actual water usage and standard water price of actual water usage is water price variance. Thus, (A) 5,116 minus (B) 6,821 resulted in a water price variance of - 1,705 which means H1 had reduced water price 1,705 in 2002 and this is a favourable result.

actual water price of actual water usage	- standard water price of actual water usage	= water price variance
5,116	- 6,821	= - 1,705

➢ **Step 5: (E) Calculation of water usage variance**

The difference between standard water price of standard water usage and standard water price of actual water usage is water usage variance. Thus, (B) 6,821 minus (C) 14,618 resulted in a water usage variance of - 7,797 which means H1 had reduced water usage 7,797 in 2002 and this is a favourable result.

standard water price of actual water usage	- standard water price of standard water usage	= water usage variance
6,821	- 14,618	= - 7,797

➢ **Step 6: (F) Calculation of total variance**

Total variance is the addition of both water price variance and water usage variance: (D) + (E) or can be calculated at (A) – (C): the difference between actual water price of actual water usage and standard water price of standard water usage. Any one of these two calculations results in a total variance of 9,502 and so H1 reduced total water cost by 9,502 in 2002.

water price variance	+ water usage variance	= total variance
- 1,705	+ - 7,797	= - 9,502

OR

actual water price of actual water usage	- standard water price of standard water usage	= total variance
5,116	- 14,618	= - 9,502

Through six steps of calculations, this study shows a reduction in water cost of 9,502 in 2002 which means H 1 operated their water efficiently through the application of the Green Hotelier standard of water usage and their hotel group's water price per sleeper night in 2001.

The year 2003

➢ **Step 1: (A) Calculation of actual water price of actual water usage**

Total water usage (21,397m^3) in 2003 times water price (0.26) per sleeper night in 2003 gives actual water cost of actual water usage is 5,563.

Total water usage in 2003	X water price per sleeper night in 2002	= actual water price of actual water usage
21,397m^3	x 0.26	= 5,563

➢ **Step 2: (B) Calculation of standard water price of actual water usage**

Total water usage (21,397m^3) in 2003 multiplied by standard water price (0.32) per sleeper night in 2001 and standard water price of actual water usage in 2003 is 6,847.

Total water usage in 2003	x standard water price	= standard water price of actual water usage
21,397m^3	x 0.32	= 6,847

➢ **Step 3: (C) Calculation of standard water price of standard water usage**

The standard water usage is identified by using total sleeper nights in 2003 (95,974 sleeper nights) multiplied by Green Hotelier's standard of water usage (0.44m^3 per sleeper night), then by standard water price (0.32) in 2001, a figure given by the environmental director. Thus, standard water cost of standard water usage is 13,513.

standard water usage (total sleeper nights x green hotelier)	x standard water price	= standard water price of standard water usage
95,974 x 0.44m^3	x 0.32	= 13,513

➢ **Step 4: (D) Calculation of water price variance**

The difference between actual water price of actual water usage and standard water price of actual water usage is water price variance. Thus, (A) 5,563 minus (B) 6,847 resulted in a water price variance of - 1,284 which means H1 reduced water price by 1,284 in 2003 and this is a favourable result .

actual water price of actual water usage	- standard water price of actual water usage	= water price variance
5,563	- 6,847	= - 1,284

➢ **Step 5: (E) Calculation of water usage variance**

The difference between standard water price of standard water usage and standard water price of actual water usage is water usage variance. Thus, (B) - 6,847 minus (C) - 13,513 resulted in a water usage variance of - 6,666 which means H1 reduced water usage by 6,666 in 2003 and this is a favourable result.

standard water price of actual water usage	- standard water price of standard water usage	= water usage variance
6,847	- 13,513	= - 6,666

➢ **Step 6: (F) Calculation of total variance**

Total variance is the addition of both water usage variance and water price variance (D) + (E) or can be calculated as (A) – (C): the difference between actual water price of actual water usage and standard water price of standard water usage. Any one of these two calculations results in a total variance of - 7,950 and H1 has reduced total water cost by 7,950 in 2003.

Through six steps of calculations, this study shows a reduction in water cost of 7,950 in 2003, which means H1 operated its water efficiently compared to the Green Hotelier standard of water usage and their hotel group's water price per sleeper night in 2001.

water price variance	+ water usage variance	= total variance
- 1,284	+ - 6,666	= - 7,950

OR

actual water price of actual water usage	- standard water price of standard water usage	= total variance
5,563	- 13,513	= - 7,950

The year 2004

➢ **Step 1: (A) Calculation of actual water price of actual water usage**

Total water usage (19,920m^3) multiplied by water price (0.23) per sleeper night in 2004 gives actual water cost of actual water usage as 4,582.

total water usage in 2004	X water price per sleeper night in 2002	=	actual water price of actual water usage
19,920m^3	x 0.23	=	4,582

➢ **Step 2: (B) Calculation of standard water price of actual water usage**

Total water usage (19,920m^3) in 2004 multiplied by standard water price (0.32) per sleeper night in 2001 and standard water price of actual water usage is 6,374.

total water usage in 2004	x	standard water price	=	standard water price of actual water usage
19,920m^3	x	0.32	=	6,374

➢ **Step 3: (C) Calculation of standard water price of standard water usage**

The standard water usage is identified by using total sleeper nights in 2004 (95,376 sleeper nights) multiplied by Green Hotelier's standard of water usage (0.44m^3 per sleeper night), then by standard water price (0.32) per sleeper night in 2001, which is a figure from the environmental director. Thus, standard water price of standard water usage is 13,429.

standard water usage (total sleeper nights x Green hotelier)	X standard water price	= standard water price of standard water usage
95,376 x 0.44m^3	x 0.32	= 13,429

➢ **Step 4: (D) Calculation of water price variance**

The difference between actual water price of actual water usage and standard water price of actual water usage is water price variance. Thus, (A) 4,582 minus (B) 6,374 resulted in a water price variance of – 1,792 which means H1 reduced water price by 1,792 in 2004 which is a favourable result.

Actual water price of actual water usage	-	standard water price of actual water usage	= water price variance
4,582	-	6,374	= - 1,792

➢ **Step 5: (E) Calculation of water usage variance**

The difference between standard water price of actual water usage and standard water price of standard water usage is water usage variance. Thus, (B) 6,374 minus (C) 13,429 resulted in a water usage variance of - 7,055 which means H1 reduced water usage by 7,055 in 2004, a favourable result .

standard water price of standard water usage	-	standard water price of actual water usage	=	water usage variance
13,429	-	6,374	= -	7,055

➢ **Step 6: (F) Calculation of total variance**

Total variance is the addition of both water price variance (D) and water usage variance (E) or can be calculated as (A) – (C): the difference between actual water price of actual water usage and standard water price of standard water usage. Any one of these two calculations results in a favourable total variance of - 8,926, so H1 reduced total water cost by 8,926 in 2004 .

water price variance	+	water usage variance	=	total variance
- 1,792	+	- 7,055	= -	8,847

OR

actual water price of actual water usage	-	standard water price of standard water usage	=	total variance
4,582	-	13,429	=	- 8,847

Through six steps of calculations, this study shows a reduction in water cost of 8,847 in 2004, which means H1 operated its water efficiently compared to the Green Hotelier standard of water usage and their hotel group's water price per sleeper night in 2001. Overall, H1 is becoming efficient in its water use by using standards of water price in 2001 and Green Hotelier water consumption in 1998. As result, H1 saved a total of £26,299 from the year 2002 to 2004 which consisted of 79% water usage reduction and 21% water price reduction (see table 6.6).

Table 6.6: Summary of sub variances of usage and price in H1 (extract from appendix 29)

Year	2002		2003		2004		Total	
Total cost saving (£)	£-9,502		£-7,950		£-8,847		£-26,299	
Saving (£)	£-7,797 usage variance	£-1,705 price variance	£-6,666 usage variance	£-1,284 price variance	£-7,055 usage variance	£-1,792 price variance	£-21,518 usage variance	£-4,781 price variance
%	82%	18%	84%	16%	80%	20%	82%	18%

The calculations applying the standard costing method to other hotels can be found in appendices 30, 31, 32, 33, 34, 35, and 36 and a summary of sub variances of usage (consumption) and price in the rest of the hotels (H2, H3, H4, H5, H6, H7, and H8) can be found in tables 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, and 6.13 (see pages from 191 -193). Except H6 and H7, most participating hotel properties have favourable results, which mean they have managed their water usage and prices well over three years in comparison with the Green Hotelier water usage standard and the hotel group's water price standard in 2001. Although H7 shows an unfavourable result, increasing total cost by £ 17,045, the year 2004 turned this unfavourable result into a positive figure. This change from unfavourable results to favourable results actually shows that the hotel group has improved its environmental performance as well as business performance in the last three years. This clear indication obtained by isolating usage and price gives a deeper insight into the relationship between usage and price not only to financial controllers but also to engineers, hotel GMs, purchasing managers and so on. Table 6.12 presents the summary of usage variance and price variance in the eight hotel properties and offers conclusions as to four main findings: usage element vs price element; efficiency vs efficient appliances; and different benchmarks vs results.

Table 6.7: Summary of sub variances of usage and price in H2 (extract from appendix 30)

Year	2002		2003		2004		Total	
Total cost saving (£)	£-11,750		£-7,730		£-5,415		£-24,895	
Saving (£)	£-10,248 usage variance	£-1,502 price variance	£-6,338 usage variance	£-1,392 price variance	£-4,148 usage variance	£-1,267 price variance	£-20,734 usage variance	£-4,161 price variance
%	87%	18%	82%	18%	77%	23%	83%	17%

Table 6.8: Summary of sub variances of usage and price in H3 (extract from appendix 31)

Year	2002		2003		2004		Total	
Total cost saving (£)	£-9,097		£-8,965		£-7,327		£-25,389	
Saving (£)	£-7,621 usage variance	£-1,476 price variance	£-7,829 usage variance	£-1,136 price variance	£-6,280 usage variance	£-1,047 price variance	£-21,730 usage variance	£-3,659 price variance
%	84%	16%	87%	13%	86%	14%	86%	14%

Table 6.9: Summary of sub variances of usage and price in H4 (extract from appendix 32)

Year	2002		2003		2004		Total	
Total cost saving (£)	£-12,580		£-11,467		£-10,574		£-34,621	
Saving (£)	£-11,087 usage variance	£-1,493 price variance	£-10,761 usage variance	£-706 price variance	£-9,231 usage variance	£-1,343 price variance	£-31,079 usage variance	£-3,542 price variance
%	88%	12%	94%	6%	87%	13%	90%	10%

Table 6.10: Summary of sub variances of usage and price in H5 (extract from appendix 33)

Year	2002		2003		2004		Total	
Total cost saving (£)	£-8,873		£-7,065		£-6,408		£-22,346	
Saving (£)	£-6,980 usage variance	£-1,893 price variance	£-5,621 usage variance	£-1,444 price variance	£-5,082 usage variance	£-1,326 price variance	£-17,683 usage variance	£-4,663 price variance
%	79%	21%	80%	20%	79%	21%	79%	21%

Table 6.11: Summary of sub variances of usage and price in H6 (extract from appendix 34)

Year	2002		2003		2004		Total	
Total cost saving (£)	£2,414		£4,160		£1,310		£7,884	
Saving (£)	£-2,867 usage variance	£5281 price variance	£-2,754 usage variance	£6,914 price variance	£-2,795 usage variance	£4,105 price variance	£-8,416 usage variance	£16,300 price variance
%	-118%	218%	-66%	166%	-213%	313%	-107%	207%

Table 6.12: Summary of sub variances of usage and price in H7 (extract from appendix 35)

Year	2002		2003		2004		Total	
Total cost saving (£)	£9,020		£10,528		£-2,503		£17,045	
Saving (£)	£1,839 usage variance	£7,181 price variance	£1,997 usage variance	£8,531 price variance	£-2,214 usage variance	£-289 price variance	£1,622 usage variance	£15,423 price variance
%	20%	80%	19%	81%	88%	12%	10%	90%

Table 6.13: Summary of sub variances of usage and price in H8 (extract from appendix 36)

Year	2002		2003		2004		Total	
Total cost saving (£)	£-8,945		£-8,440		£-9,945		£-27,330	
Saving (£)	£-7,811 usage variance	£-1,134 price variance	£-7,183 usage variance	£-1,257 price variance	£-8,395 usage variance	£-1,550 price variance	£-23,389 usage variance	£-3,941 price variance
%	87%	13%	85%	15%	84%	16%	86%	14%

Table 6.14: Summary of total water cost results from 2002 to 2004 (£)

Year	2002			2003			2004			Total (2002 - 2004)		
	Usage variance	Price variance	Total cost variance	Usage variance	Price variance	Total cost variance	Usage variance	Price variance	Total cost variance	Usage variance	Price variance	Total cost variance
H1	£-7,797 (82%)	£-1,705 (18%)	£-9,502 (100%)	£-6,666 (84%)	£-1,284 (16%)	£-7,950 (100%)	£-7,055 (80%)	£-1,792 (20%)	£-8,847 (100%)	£-21,518	£-4,781	£-26,299
H2	£-10,248 (87%)	£-1,502 (13%)	£-11,750 (100%)	£-6,338 (82%)	£-1,392 (18%)	£-7,730 (100%)	£-4,148 (77%)	£-1,267 (23%)	£-5,415 (100%)	£-20,734	£-4,161	£-24,895
H3	£-7,621 (84%)	£-1,476 (16%)	£-9,097 (100%)	£-7,829 (87%)	£-1,136 (13%)	£-8,965 (100%)	£-6,292 (86%)	£-1,047 (14%)	£-7,339 (100%)	£-21,742	£-3,659	£-25,401
H4	£-11,087 (88%)	£-1,493 (12%)	£-12,580 (100%)	£-10,761 (94%)	£-706 (6%)	£-11,467 (100%)	£-9,231 (87%)	£-1,343 (13%)	£-10,574 (100%)	£-31,079	£-3,542	£-34,621
H5	£-6,908 (79%)	£-1,893 (21%)	£-8,801 (100%)	£-5,627 (80%)	£-1,444 (20%)	£-7,071 (100%)	£-5,082 (79%)	£-1,326 (21%)	£-6,408 (100%)	£-17,617	£-4,663	£-22,280
H6	£-2,867 (-118%)	£5,281 (218%)	£2,414 (100%)	£-2,754 (-66%)	£6,914 (166%)	£4,160 (100%)	£-2,795 (-213%)	£4,105 (313%)	£1,310 (100%)	£-8,416	£16,300	£7,884
H7	£1,839 (20%)	£7,181 (80%)	£9,020 (100%)	£1,997 (19%)	£8,531 (81%)	£10,528 (100%)	£-2,214 (88%)	£-289 (12%)	£-2,503 (100%)	£1,662	£15,423	£17,085
H8	£-7,811 (87%)	£-1,134 (13%)	£-8,945 (100%)	£-7,183 (85%)	£-1,257 (15%)	£-8,440 (100%)	£-8,395 (84%)	£-1,550 (16%)	£-9,945 (100%)	£-23,389	£-3,941	£-27,330

1) Usage element vs price element – aiding employees to make wise decisions

Table 6.12 shows cost results in usage and price in each hotel property and hotel managers can find detailed information to make improvements in business operations. For example, in H6, water usage is efficient compared to the Green Hotelier benchmark and has saved almost £3,000 per year, identified by using variance analysis. On the other hand, water price in H6 is a problem and needs to be investigated. Moreover, both usage and price variances that are determined to be significant can be investigated and careful observation and discussion with key employees involved in producing the output that led to a variance will aid in assessing what circumstances appear to provide the explanation. Consideration of what should be done in the future can lead to the elimination of significant variances. In an objective review of observations and discussions, questions may arise as to the appropriateness of the standards established. According to detailed variances of usage and price, there may need to be a review of earlier analyses that were the basis for the forecast used in the budget followed by managers. In short, more problems and a deeper insight into influential factors can be explored by isolating the usage element from the price element.

2) Efficiency vs investment in efficient appliances

According to table 6.12, cost savings in H1, H2, H3, H4, and H5 have decreased gradually. This decrease from 2002 to 2004 has revealed a question as to the efficiency of installing new technology (e.g. water saving appliances). Although investment in efficient appliances could assist managers to reduce water usage, there are a number of factors managers should consider, e.g. need for maintenance and life cycle of equipment. Any equipment needs to be maintained to perform well and a maintenance programme should perform cost-effective activities that preserve the availability, operability, and reliability of equipment, so that it can support business objectives and fulfil its intended life cycles and purposes. The reduction of cost saving in five hotel properties actually raised two main questions for managers to consider. For example, does the condition of equipment suggest a need for maintenance? What is the current equipment's

usefulness and ability to perform and is it becoming technologically obsolete or deteriorating because of age? These questions could help managers to justify replacing equipment, adjusting maintenance practices and budgets, and strengthening equipment control.

3) Problems with setting a "standard"

The goal of the managers responsible for setting standard costs is to provide realistic standards and it is important that employees at all levels are motivated to achieve output with specified standards. If standards are unreasonable - either too tight or too loose—the level of discipline expected is seriously undermined. If standards cannot be achieved with reasonable effort, employees may become discouraged and become so indifferent that their work quality deteriorates significantly. If standards are too easy to achieve, there may be an unnecessary waste of resources. For an Organisation to gain optimum value from standard costing, all employees involved must understand the motivation for such costing and understand the assessment that will be made. Imposing standard costs without communicating in an honest, candid manner will undermine much of the perceived value of such costing.

In short, the use of the standard costing method could help managers to isolate water usage and water price, which would provide another opportunity to reduce water costs simply by obtaining a better price from the supplier. However, due to the variable elements of water bills from different water suppliers, hotel Organisations should be cautious when employing the standard costing system in order to obtain more information. Moreover, the application of water benchmarks and a standard costing system should lead management to take action, which could be far less costly than the expenses brought about by unnecessary payments. These two techniques enable the business to have a more competitive cost advantage and ultimately attain a higher bottom line figure. However, the calculation of variances is not an end in itself. The main use of variances is to stimulate improved performance and therefore managers need to understand the potential causes of variances in order to identify those that they can control. Most importantly, managers should be aware of some potential errors that could result in variances. For

example, this study could not identify the "appropriate standard" of water usage and water price and thus the standard was set at a level that might not reflect current conditions. Therefore, it is believed that there is a need to modify standards at a specific interval, in view of changes in business operations, because if Organisations set standards at a level difficult to achieve then they may face resistance from employees. Moreover, one participating hotel property did not have detailed records of water prices and usage and this could result in significant variances, which might mislead managers into making inappropriate decisions. In short, it is believed that the standard costing system could provide useful feedback information to help managers control EMPs through the plans they set and their decision making.

6.4 Summary

In assessing water bills and financial documents this study found that the case study hotel group could take more action to improve environmental performance at the reviewing and correcting stage. For example, it did not adopt a flexible and integrative planning approach allowing for the consideration of multiple goals and enabling adjustments to changing needs. It has not made use of data and information at all stages of planning and management, making systematic and simultaneous use of relevant data that stresses interactions and synergies and a broad range of analytical methods so as to provide various points of view. Most importantly, there is a need to look into Organisational structure, in terms of functional relationships and linkages between different levels and departments within a given scope of environmental responsibilities. The factors identified by this study link to each other and the effective controlling of EMPs is not the responsibility of finance and accounting personnel alone, but also involves an Organisational team effort. Management has the most important role because it is responsible for allocating both financial and human resources to support the system.

Main findings from three sources of data

In sum, the hotel group has responded in an active manner to recent challenges and this leaves it well positioned to take advantage of the forecast recovery in the global economy as it moves forward during the coming years. This section has summarised a number of main findings from the evaluation of documents, archival records, and interviews with managers.

A. The influence of business strategy on approaching environmental management

The hotel group's business strategy is to build a strong brand and enhance returns to shareholders through continued expansion, and to improve internal control systems. Consequently, the aim of implementing an environmental management programme is a response to business strategy which would deliver a contribution to cost savings. Table 6.15 summarizes the main findings about general business management and environmental management and it shows that the implementation of environmental management programmes actually aims to increase profitability, in turn to enhance returns to shareholders. Hence, the findings suggest that the level of integration of setting environmental goals into business strategic planning seems positively related to financial and environmental performance.

B. The influence of governmental regulation on investing in hotel buildings and facilities

It was found that government regulations on water performance have an influence on investment in installing water efficient appliances. According to the Organisation's documents on water consumption, it was shown that newly opening hotel properties are more efficient with their water use than existing hotels in old buildings. The original reason that the participating hotel group invested in water equipment and facilities was that it was required under government regulations, and later they realized the financial benefits of complying with government regulations on water use and codes. Hence, it is

believed that when attempting to minimize resources used by investing more in efficient appliances, the hotel group was forced to re-examine operational processes, and under these circumstances obtained a double benefit by developing more effective operation processes that not only reduced waste of resources, but also reduced the need for hotel resources. As a result, governmental regulation has promoted innovation in hotels' equipment, which assists them to reduce resources used.

Table 6.15: the main findings from company documents

	In general	*In specific: EM*
What	- Acquisitions - Continued expansion - Enhanced returns to shareholders	- Reducing substantial resources used, such as water and energy resources, in order to reduce costs so as in turn to enhance profitability
Why	- Investing in building up a strong brand - Investing in people - Well positioned in market	- Recognizing the environmental responsibilities that they carry on behalf of their guests, employees, and community
How	- Improve central control functions and cost controlling - Effective internal control system - Benchmarking business performance	- Environmental plan: energy, water, waste, effluent, and emission areas - Environmental action: survey checklist, review, setting tasks and goals, recording, and monitoring
Results	- Financial performance is solid and targets goals have achieved - Operating profit has increased over last five years	- Achieved targeted goals and continue to improve environmental performance

C. The influence of investment on improving environmental performance

While evaluating water saving appliances, it has been found that the number of water efficient appliances installed was variable in the hotel properties (see table 5.3). This study discusses twelve water efficient appliances for the hotel organisation and evaluates whether the participating individual hotels have installed these devices to improve their water performance. The findings from

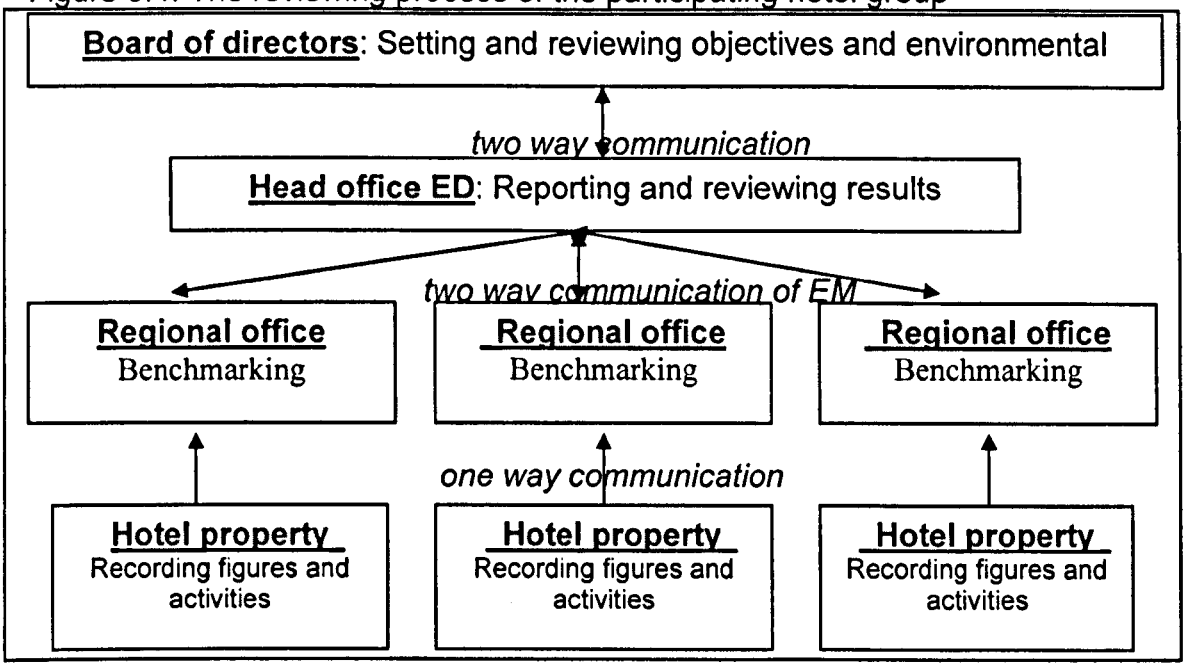
evaluating the numbers installing these water appliances showed the installation of water efficient appliances helps hotels to reduce water consumption. For example, the average water consumption per guest at the eight hotels is 0.244 cubic meters. Apart from H6 and H7, the rest of the hotels have lower than average water consumption per guest. In particular, H1, H2, H3, H4, and H8 were very efficient with their water use and table 5.3 shows these five hotels have five or more water efficient appliances installed. Hence, this finding suggests that interaction between investment in more efficient appliances and improvement of environmental performance suggests a positive relationship. In this sense, innovation in hotel equipment could have a critical influence on improving environmental performance.

D. The influence of communication between top management and bottom line management on improving environmental performance – central driven approach

From investigating the measurement and communication of environmental performance at three levels - head office level, regional level, and hotel property level - it has been found that environmental policy, governmental requirements, environmental action plans, and written environmental responsibilities only exist at the head office and regional level. At the hotel property level, none of these environmental documents are found. Each hotel property came up with its own solutions on how to reduce, reuse and recycle resources; and overall coordination throughout the hotel group was lacking. Moreover, the environmental related information was not well communicated from head office level to hotel property level. Figure 6.4 illustrates the communication between head office level and hotel property level and it has been found that there was one way communication between regional level and hotel property level. Further to this, most environmental decisions were made centrally by the head office ED, regional GM, regional ED and regional FC and this central decision-making could be the reason that the participating hotel group did not communicate environmental related information throughout the whole Organisation and why investment in improving environmental performance could only be found in the newly built hotels. Therefore, the hotel

group seems to use the central driven approach to implement environmental management programmes.

Figure 6.4: The reviewing process of the participating hotel group

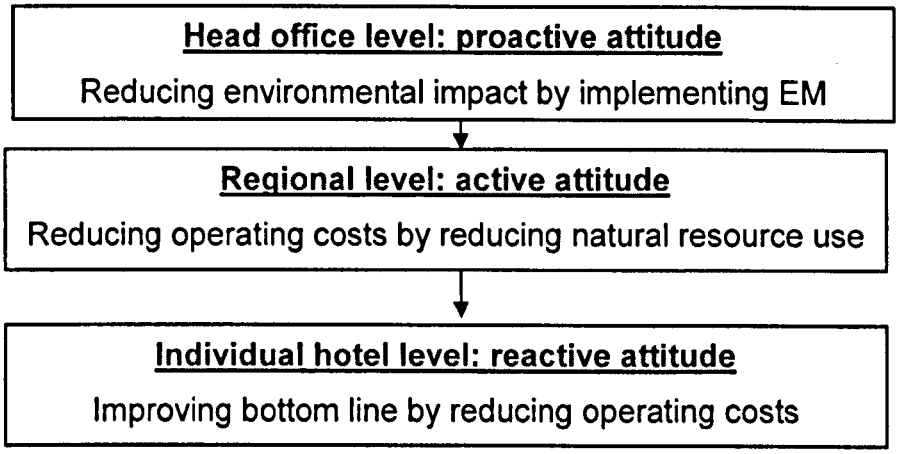


E. The influence of managers' background and responsibilities on their attitudes

The backgrounds and responsibilities of the interviewees have been identified as factors influencing their perceptions about environmental issues. More specifically, there are four elements significantly affecting managers' attitudes about environmental issues: experience in the hotel business, position and responsibility held, nationality and governmental regulations, and educational background. In general, all interviewees expressed that they fully supported EM programmes which would contribute to the bottom line. But there are differing degrees of support among informants as illustrated in figure 6.5. For example the head office ED, who has shown himself to be environmentally friendly in outlook and practice, is trying to persuade the board of directors to invest in more efficient appliances to reduce resource consumption as well as reducing costs. However, the regional ED, regional GM and regional FC are more conscious about the bottom-line contribution and they are developing a historical database to set up an internal benchmark for all environmental

performance. Moreover, the individual hotel GM and FC are more cost oriented because of pressures from daily operations. These results are explained in terms of environmental attitudes seeming to have a relationship with the scope of managers' responsibility.

Figure 6.5: Different attitudes about environmental issues at different levels within the participating hotel group



This study has explored the fact that both 3 star hotels and 4 star hotels have introduced towel and sheet changing programmes on request. Some managers view this programme as a cost saving exercise that does not affect guest comfort and most guests are willing to cooperate with the hotel group's environmental policy. The most obvious management requirement of the hotel group is to meet customers' needs in order to achieve business financial goals. It is apparent that customers could be major contributors to reducing utility consumption in the hotel industry; their attitude would have a significant impact on the effectiveness of EM. However, for a hotel Organisation with a commitment to provide a good quality service to customers, encouraging customers' participation in EM should be done properly and indirectly.

F. Shortage of certification EMS to assist the implementation of EM programmes

Due to managers' cost consciousness, the hotel group did not use any certified EMS, but they have developed their own environmental action plan to address

and continuously improve their environmental performance. Although the participating hotel group thinks the EMS could be a part of the general system of management of their business, research into the applications of EMS in the hotel group has shown that there is a gap between the company's policies on environmental management systems and existing information supporting them. However, the hotel group is seeking a cost effective EMS to achieve both its business goal and environmental goal, since the cost of certification could be a barrier to adoption.

G. Lack of employee knowledge about implementing EM programmes

Knowledge of implementing EM programmes does not come naturally to most people and this study shows that most interviewees seemed singularly frustrated with their lack of knowledge about raising employee consciousness about the environment and implementing EM programmes. However, the hotel group is working together with external experts to manage its overall environmental project in order to improve environmental performance, to in turn achieve business goals.

H. Low degree of interaction between environmental management practice and accounting system

There is no environmental performance data in the hotel group's annual documents referring to environmental related financial investments; and no operational institution for budgeting, reporting, and auditing execution of EMPs. This study has shown that investment in more efficient appliances did not appear in budgets and utility costs were recorded as part of overhead in the profit and loss account and regarded as only an indirect influence on profitability. So, it is doubtful that there is a direct link between EMPs and accounting systems.

I. The influence of water supplier and water price

The assessment of water bills shows that different water suppliers have different prices. The evaluation of water bills in eight hotels has shown that water price can be variable even with the same water supplier and water price is re-assessed every year by both regional purchasing manager and regional financial controller and negotiated with the supplier in order to obtain the best packages. Moreover, the findings from evaluating water bills reveal that water price has increased for the last three years (2002 – 2004), especially the waste-water price (see table 6.1). This study has found that two hotels' water suppliers have been working together with their customers in order to reduce water usage and hopefully reduce water costs. Therefore, the influence of the water supplier is essential to cut down on not only water costs but also on consumption.

It is important to note that water bills normally consist of fixed service cost and water rate cost and this study has excluded fixed charges from the analysis. Another finding shows that an increase in water consumption does not really lead to an increase in water cost if managers can obtain a cheaper price with their water supplier, and four hotel properties in table 6.2 actually confirmed this finding (see H1, H2, H4, and H8).

J. The influence of performance indicators

The findings from evaluating environmental related information in the accounting system have shown that the recording of information and the development of environmental indicators did not assist managers to measure water performance accurately over the last three years. However the hotel group has realized that it is important to bring together specific and targeted monitoring of the relative impacts of different activities, or different ways of approaching the same activities, so as to provide a framework from which to judge best practice in the use and management of natural resources. Therefore, both the head office environmental director and regional financial controller have developed energy performance indicators based on the total

available rooms and occupied rooms. More specifically, water consumption data is more accurate if based on the numbers of guests; thus it would be meaningless to try comparing hotels using a single kind of denominator, and therefore the simultaneous use of different kind of indicators would obtain a more objective view of environmental performance for managers.

K. The influence of water pipe size

Although there is no significant numerical figure to identify how the size of water pipes could influence the volume of water consumption, there is a relatively close relationship between water pipe size and water consumption. By comparing water performance indicators with water pipe sizes in eight hotels, H6 has the biggest water pipe size and highest water consumption per guest. The results of relatively higher water consumption correlating with biggest water pipe size (see table 6.1 and table B) might raise a real concern about reassessing the relationship between water pipe size and water consumption. In addition, only one hotel has two water meters and this made it difficult to obtain deeper information about each area of water consumption; it is believed that sub metering could help managers to monitor their discretionary use and determine how new water efficient equipment performs.

L. Three approaches to implementing EM programmes

Considering the findings from evaluating some written documents, it may be concluded that the hotel group is not specifically following any certified environmental management system; and the lack of financial resources could be an important barrier to paying for a certification process. However, the investigation of water management specifically at the operational level has identified activities undertaken in individual hotels in three categories - activities without any capital investment; activities with investment with medium term payback of less than one year and activities with longer-term investment of more than one year. The activities without capital investment suggest that when hotel managers want to improve their environmental

performance they can initially act on human resources (training and staffing level), and then focus on actions with capital investment at an operations level, in order to radically change the inside of the hotel facilities and equipment.

M. Need to develop a reward or incentive system

The findings have revealed that the hotel group did not follow any incentive system to encourage their employees to implement environmental management programmes. However, the head office environmental director realizes that an incentive system could support the identification of priority environmental issues to be addressed in the development of an environmental action plan, or the implementation of priority actions already identified through the environmental management process. He later pointed out that it takes time to develop an effective incentive system of encouraging employees because some actions cannot be identified and quantified in term of monetary or numerical figures. However, the hotel group has established a set of activities that could promote successful EMPs within the hotel group, and is trying to communicate successful results with stakeholders.

Chapter Seven Discussion

The aim of this chapter is to discuss several main findings about implementing EM programmes, by comparing extant literature and primary data. These include:

- Firstly, the effects of bottom line concern and relevant factors influencing environmental performance are discussed;
- Secondly, a number of reasons for not implementing a formal EMS are identified;
- Thirdly, justifying the findings about the lack of relationship between the accounting system and EMPs in the case study hotel group;
- Fourthly, findings from adopting variance analysis to benchmark EMPs are illustrated;
- Fifthly, findings of how key managers' attitudes and knowledge affect environmental performance.

7.1 Influential factors in improving environmental performance

There is a significant emphasis on cost reduction as a key motivator for environmental engagement and a strong link between environmental management and legislation, suggesting that businesses retain an orientation towards evaluating environmental issues by reference to their relevance to bottom-line economic considerations. Besides identifying bottom line concern as the main reason to motivate businesses to implement EMPs, three stakeholders are found to be associated with lowering costs, achieving efficiency and competitive advantage: governments, customers, and suppliers.

7.1.1 Bottom line concerns

Reducing costs has always been considered an effective way to achieve competitive advantage. Findings about why businesses approach environmental issues support what most authors (e.g. Dahlmann, 2008; Zhu et

al., 2007; Darnall, 2006; Bansal, 2006; and Bohdanowicz, 2005) claim - bottom line concern appears to be main reason for Organisations to implement EMPs. It is believed that EM does lead to improved environmental performance but at the same time it is not necessarily true that all EMPs could directly enhance financial performance. It is found that most managers are more concerned about seeking short term benefits rather than long term. Overwhelmingly, the processes identified by businesses operate over relatively short time spans. For example, it is found that investing in efficient appliances is the basis of an effective EM programme; however, it must be borne in mind that these water devices could reduce water consumption in the short term but would not be efficient in the longer term without proper maintenance. This finding confirms Faulkner et al.'s (2005) argument and differs from what some authors advised about the time horizons over which EMPs require that Organisations take a long-term view (e.g. Manaktola and Jauhari, 2007; Arago´n-Correa et al. 2004). Hence, it is believed that long term planning cycles may not be the best way of improving environmental performance, and the financial performance of an Organisation is affected by environmental performance in a variety of ways. For example, this study investigates how businesses manage utilities which are regarded as part of environmental management programmes. The result is similar to Adams (2006) and Bruns (2000) who suggested that better utilization of natural resources can improve efficiency and reduce operating costs in the short term (e.g. 3-6 months).

Moreover, investment in more efficient technologies could help Organisations to reduce operating costs because these efficient technologies would consume fewer resources (e.g. water and energy). The assessment of efficient appliances in the hotel group confirmed a number of successful cases in IHEI, Green Globe 21, IH&RA, and Hospitality Net and this is in line with the literature (e.g. Zhu et al., 2007; Simpson et al., 2007; and Gonzalez-Torre and Perez-Bustamante, 2006). However, the analysis of capital investment and budget found that the hotel group excluded environmental related investments in existing hotels but integrated environmental related investments into newly opening hotels. As a result, the hotel group is beginning to realize financially attractive investments in more advanced technologies from the comparison

between newly opening hotels and old hotels. This is in line with a number of studies (Horngren et al., 2008; Water UK & EA, 2003; Green Building Store, 2003; Alexandre and Kennedy, 2002) which show that investing in appliances could reduce resource use. However, the hotel group only focuses on profit-related environmental issues, and places relatively little emphasis on the technical issues and this could result in an even worse situation in the longer term. There is a lack of literature offering information to hotel groups looking into the technical aspects of environmental related activities. The hotel group has successfully reduced utility use by innovating in equipment, but measurement of return on investment was lacking and this could result in inefficient use of equipment in the longer term. Thus, it is important that a hotel Organisation should plan a preventive maintenance programme to maintain equipment efficiency and thus improve bottom line in the long term.

In addition, this study identifies three stakeholders who have interests and influences in the process of implementing EM, which contributes to the bottom line. They are governments, customers, and suppliers and the following section discusses findings as to how to cooperate with these stakeholders to improve environmental performance.

7.1.2 Complying with governmental regulations is a trigger to integrating EM

Dealing with increasing environmental regulations on a national and international basis is becoming one of most important driving forces for the hotel group's responsiveness in improving environmental performance. However, this study found that improving environmental performance by complying with governmental regulations is not an incentive in the hotel group but rather the focus is on reducing threats of liabilities and costs of compliance with those regulations. Originally, governmental regulation appears to have been manifested as pressure on the hotel group to approach environmental issues, and as a result the hotel group started to think about its environmental impact for the first time, taking responsibility for setting and achieving environmental goals. Moreover, the findings show that Irish based hotel

properties were more active in investing in more efficient appliances than the UK based hotel properties even though both hotel properties belong to the same Organisation. The explanation behind these different attitudes toward environmental issues is that Irish government regulation is stricter than that of the UK. The finding is consistent with a number of authors' idea (e.g. D'Souza et al., 2006; Blair and Hitchcock, 2001; Quzi, 2001; and Porter and Vin der Linde, 2000) that strict governmental regulation could put pressure on Organisations to approach environmental issues and change practices.

There is no doubt that the hotel group's investment in more efficient appliances is because of governmental pressures to start with, with utility consumption cutting opportunities resulting afterwards. This finding supports what previous literature (Burgos-Jimenez, 2002; and Porter and Vin der Linde, 2000) has indicated, that governmental regulation may force Organisations to re-examine their operational processes and develop more effective ones that could not only reduce resource wastage, but also decrease operating costs. Thus, it is believed that governmental regulation affects the Organisation's interaction with its resource usage, dictating which business performances are improved. This finding supports Porter's win-win concept that tighter governmental regulation could spur Organisations to undertake environmental innovation and through complying with governmental regulation, the hotel group comes to realize a reduction in resource-use through using efficient technologies, which in turn represents a decrease in operating costs. Hence, it is believed that businesses could benefit from environmental regulations and that the integration of environmental issues into business operations stimulates equipment innovation.

However, this study would argue against Palmer et al.'s (1995) point of view: "why is regulation actually needed for firms to adopt profit increasing innovation"? In this study, most managers expressed the view that they would not change unless there was a pressure to do so or benefit to be gained from changing their daily practices. Besides, regulation is often developed to help businesses look into specific areas and to assist them to implement programmes more successfully. This is in line with a number of authors'

(Ruiz-Tagle, 2008; Okcabol, 2007; and Chan and Ho, 2006) comments on how to work together with government to achieve business objectives. Thus, governmental regulation is actually needed for businesses to adopt more efficient equipment, which assists managers to use their resources more efficiently. It may not have come as a surprise that this study found that environmental regulations can initiate technological change and investment in more efficient appliances, which could enhance resource productivity. Most importantly, this study suggests that there is an interrelationship between governmental regulation and environmental performance. However, factors influencing the business environment are complexly intertwined and it is difficult to pinpoint in terms of data the direct relationships between environmental regulation and adoption of innovative equipment.

7.1.3 Satisfy customers to explore new markets or retain customers

Over the last few years there has been an upsurge in the environmental awareness of consumers in general and the degree to which management understands customers is critical to business success. It is encouraging to note that the hotel group is willing to translate its concern for the environment into action which could help managers to reduce operating costs as well as to satisfy customers' needs. The findings support the literature (e.g. Manaktola and Jauhari 2007; Phau and Png, 2006; and Bigsby and Ozanne, 2002) which states that Organisations are developing company-wide environmental programs and "green" products to explore new markets. They may also confirm what the literature has summarised (Phau and Ong, 2007; Manaktola and Jauhari, 2007; Environmental Net Network, 2003; IHEI, 2003; and Burgos-Jimenez et al., 2002), that most Organisations are aware of customers' willingness to pay for environmentally friendly products, but this study could not provide any further information about whether customers are ready to pay more for "green" products. Instead, it investigates how the case study hotel group communicates environmental related information with customers. Its findings could not provide further information to support some authors' (Jone et al., 2007; Ricky et al., 2006) point of view in relation to customer influence.

Moreover, little information is communicated to customers about efforts in relation to environmental issues in the hotel group, and most managers discussed the marketing implications if Organisations have really implemented EM programmes resulting in effective improvement in the environmental impact of business operations. The hotel group does not want to flow into a situation akin to Gray et al. (1993)'s statement that environmental related policy is in danger of being viewed merely as a public relations exercise, lacking management commitment. In line with Sloan et al.'s (2004) argument, the case study hotel group will never use environmental arguments in its advertising campaigns until it actually reduces the environmental impact of business operations. Otherwise, the marketing programme would be neither credible nor sustainable.

It is a pity that the hotel group, which has invested time, effort and money in various activities to reduce resource use, does not communicate with customers about what it is doing to reduce wastage in this area. This finding diverges from those of some authors (Grafte-Buckens and Hinton, 1998; and Ottman, 1998) that communicating with stakeholders about successful practices in relation to environmental issues could help obtain a better image for Organisations. Consequently, the hotel group may miss opportunities to market itself as concerned about the environment. However, this is not to imply that the hotel group should undertake environmental marketing activities to mislead customers in an attempt to gain market share. Instead, this study found that the hotel group deals with environmental issues as well as with customers' concern about quality and comfort. Therefore, this study suggests that communication between hotel Organisations and their customers about being environmentally friendly is important, to comfort customers and obtain a competitive advantage over an Organisation with no responsible marketing of its environmentally friendly activities.

7.1.4 Suppliers' cooperation – save cost through price cutting and resource use reduction

The hotel group realizes that it is critical to develop a good relationship with

suppliers, in that Organisations might be able to encourage them to alter their products so they can meet customers' needs while also delivering sound environmental performance. It is apparent that a hotel Organisation can make much progress in improving environmental performance with backup from utility suppliers. An obvious example in this study is the hotel group's water supplier, Thames Water, which has provided useful information to customers (including hotel Organisations) after receiving feedback and information from them. For instance, Thames Water developed a water benchmark for hotel customers in order to give them a standard to identify how efficient their water usage is compared with other competitors. This finding is consistent with literature (e.g. Gonzalez et al., 2008; Simpson et al., 2007; Canning and Hanmer-Lloyd, 2007; Rao and Holt, 2005; Simpson and Power, 2005; Dyer and Chu, 2003), which suggests that cooperation with suppliers could help Organisations to improve environmental performance.

Moreover, analysis of the hotel properties' water bills, from various water suppliers, showed that there is a trend towards increased water price over the past three years, and that there is a need for the hotel group to get reasonable water prices from various water suppliers, because tariff structures for water supply and waste treatment have a role in increasing the cost effectiveness of resource usage. This finding confirms the announcement of the Office of Water Services (2004), and attention to developing regulations in relation to water treatment solutions has been increased (The Department for Environment Food & Rural Affairs, 2002; and the Water Regulation Advisory Scheme, 1999). Thus, it is believed that the more feedback Organisations give to their suppliers, the easier it will be for these suppliers to provide Organisations with the products and services they want at a price that is right.

In addition, this study identifies that cost of water in water bills varies. For example, the cost of delivering clean water to urban areas generally depends on the proximity of raw water sources, the degree of purification needed and the settlement density of the area being served. The cost of providing sewerage and treating waste water also depends on settlement density, as well as the characteristics of the influent and the required quality of the effluent.

It is therefore only to be expected that water prices, sewerage, and waste water treatment charges would vary widely between and within countries. None of the authors have identified the cost of water treatment which may affect managers' view while tracking relevant water costs. However, water and sewage price variations also reflect a number of factors influencing the differences in delivery costs that greatly affect price levels. For example, volumetric charge, flat rates and waste water treatment fees are sometimes calculated as a fixed proportion of the water supply bill, but they may also vary with the volume of water actually supplied. This finding reveals the importance of identifying utility costs and supports the idea of the importance of identifying environmental related costs (Marinou, 2008; Waggett and Arotsky, 2006; and Adams, 2002). Some authors (e.g. Schaltegger and Burritt, 2001; Spitzer and Eldwood, 1995) have even attempted to develop frameworks to identify different costs related to Organisational business activity costs. However, they do not go into details about identifying utility costs and therefore it is important to have a clearer picture of the true cost of water services from water suppliers, because managers can use this information to estimate the effectiveness of their efficient appliances. Also it can be much more rewarding for Organisations to partner collaboratively with a supplier on an ongoing basis than to change across a wide range of different suppliers

While not denying that these three stakeholders' influences may not reflect on the actual benefits of implementing EM programmes, they are often critical factors in establishing the acceptability of such programmes. This study found that the case study hotel group is responding to environmental issues by cooperating with influential stakeholders to reduce both costs and environmental impact. Results show that the case study hotel group is working hard toward Elkington's win-win win concept, although there are no real figures to demonstrate their relationship. Perhaps it would encourage the industry to adopt EM if there were a demonstration of a clear, significant and observable correlation between business performance and environment protection.

7.2 Reasons for not implementing a formal EMS

Managers are faced with making a strategic decision about whether to adopt an EMS and this study found that the hotel group did not use any classic or formal EMS, such as BS7750 or ISO14001, to implement its EMPs. This finding is in line with studies by Chan and Ho (2006) and PriceWaterhouseCoopers and International Hospitality Research (2001), where the majority of participating international hotel groups did not have a formal EMS. To extend Sena da Silva and Dumke de Medeiros' (2004) argument about Organisations' resistance to EMS adoption, this section discusses a number of reasons why the case study hotel group did not apply a formal EMS to improve environmental performance (see Zutshi et al. 2008; Gonzalez et al. 2008; Fortunski, 2008; and Ann et al. 2006)

7.2.1 Regarding a formal EMS as an extra cost

Managers today are under increasing pressure to demonstrate that they do not pursue profit at the expense of the environment; instead, they should protect the environment at any cost. However, this study identifies that the fear of increasing costs is a critical factor inhibiting the adoption of a formal or "more competent" EMS in the hotel group. This finding confirms those of the literature (Tzschentke et al. 2001, and Kirland, 1999,), that an EMS certification is generally perceived as an expensive endeavour while Organisations are quick to associate EMSs with cost. It is not surprising for managers to think that EMS may do no more than add to the costs of operations, as Kirkland (1999) indicated that most managers were afraid of the cost of implementing EM programmes when not familiar with environmental initiatives. Also, this study is consistent with KMPG's finding (1996) that unfamiliarity with EMS is a significant impediment to the application of an EMS, and confirms Lozano and Valles (2007) and Vogel's (2005) arguments that adopting an EMS may not necessarily lead to the improvement of environmental performance. Therefore, this study suggests that by understanding the factors of EMS adoption, managers may be able to assess their Organisation's anticipated adoption cost and therefore develop internal support to implement EM programmes.

7.2.2 Underestimating the benefits of a formal EMS

It is essential to understand the benefits of a comprehensively developed EMS to assist managers in achieving business objectives. In this study, cost is a critical factor influencing managers' decisions in dealing with daily business operations. The hotel group has not introduced any accredited EMS although most managers have recognized that many changes are occurring in the business world today and that there are significant benefits to adopting an EMS over traditional compliance. The hotel group is not so sure whether a certification EMS could help managers to evaluate all opportunities for cost savings theoretically. Moreover, most managers were aware that formal EMS is not necessarily a framework which can help businesses to establish specific environmental performance requirements. Hence, this study reveals that the benefits of adopting an EMS are not recognized by some key managers and the costs of an EMS appear to outweigh the benefits mentioned by various authors (Zutshi et al. 2008; Gonzalez et al. 2008; Fortunski, 2008; and Ann et al. 2006; Deanna, 2003; Lawrence, 2002; Santos-Reyes and Lawlor-Wright, 2001; Rezaee and Elam, 2000; Rondinelli and Vastag, 2000). This study, though, suggests that managers should regard an EMS as a tool to assist them in setting performance targets and measuring their performance in order to obtain some benefits.

7.2.3 Company based action plan to replace a formal EMS

Although the hotel group did not have a formal EMS, the hotel group realized that an EMS could assist managers to verify the impact of an Organisation's activities on the environment and help Organisations to establish environmental goals and targets and evaluate how well they are being achieved. As result, the hotel group has developed its own environmental action plan which expects to improve overall business performance by achieving environmental goals and targets. This environmental action plan has developed into five steps, similar to BS 7750 and IH &RA's action plan. This finding concurs with the literature (Perez et al., 2007; Pun et al., 2002; and Davis, 2000): the hotel group notices that every industry has its own

characteristics and hotel Organisations cannot just use the same EMS as, for example, the chemical or oil industries. Therefore, it is believed that a hotel Organisation does not need to follow a classic EMS and that it can modify extant EMS according to needs and objectives, e.g. Pun et al. (2002)'s five stages of EMS, Pryce (2001)'s six elements of EMS.

However, it is found that the hotel group's EMPs appear to be at a fairly early stage with an emphasis on developing plans rather than setting concrete targets for delivering improvements or systematically and periodically reviewing activities and impacts. Besides, the hotel group did not consider the aspects of employee perceptions and the management of change when designing the environmental action plan for the Organisation. This finding is contrary to Bohdanowicz's (2005) recommendation that an Organisation-based EMS should integrate critical factors that could help managers to implement EM programmes more successfully. As a result, the implementation of EMS in the hotel group is far from the situation indicated by Fortunski (2008) whereby EMS should emerge as a means to systematically apply business processes that simultaneously improve environmental performance.

Most managers complained about the shortage of environmental frameworks in relation to profitability for hotel Organisations and some managers have even seen EMS implementation as essential due to a perceived link between EM and profitability This finding is consistent with the literature which argues that most EMS developed for hotel Organisations tend to neglect the financial aspect, such as Khatri's four Rs (1996), IH&RA's environmental action pack (1995), and Middleton and Hawkins' ten Rs (1998). Based on Kirk's EM system, Wade (1998) has developed a complex EM model which has shown multidimensional aspects of implementing EM programmes. However, the aim of Wade's EM model is to encourage hotel Organisations to be more responsible towards the environment and it is not focused on cost saving. It is difficult for the hotel group to implement EMS practically step by step while there is a lack of financial related EM frameworks for hotel Organisations. Hence, there is a need for the hotel group to develop EMS or environmental

management frameworks, which link to financial aspects in a coherent way, in order to integrate business processes successfully.

7.2.4 Lack of knowledge about implementing EMS

One of the most difficult tasks in implementing EMS comes at the start of the process: it needs every employee's participation and knowledge. In other words, knowledge-based skill could be considered as complementary to the successful implementation of EM programmes. However, this study found that managers in the hotel group did not have knowledge of dealing with environmental issues while most of them were not familiar with environmental issues, and this finding confirms the literature (e.g. Zutshi et al., 2008; Penny, 2007; Govindarajulu and Daily, 2004). Although a few key managers have the capability to make decisions quickly, they still have difficulties in encouraging collaboration among employees at different levels and have no specific knowledge and experience regarding environmental matters. Consequently, lack of knowledge and experience could be a reason that the hotel group is not adopting formal EMS. This finding is in line with the literature (e.g. Chan and Ho, 2006; ISO, 2001; Tilley, 1999) which states that the success of implementing EMPs requires extensive knowledge and monitoring of Organisational resources, constraints, production capabilities, and processes. It is a troublesome process to get all employees involved and this requires both a basic understanding of environmental issues and specific knowledge of an Organisation's resource use and environmental related benefits.

Moreover, this study suggests that managers have difficulties committing to implementing EM programmes when they have little knowledge about related environmental issues. There appears to be a fear factor about lacking expertise in the area of EM and most managers see EM as adding more tasks and complexity to their routine jobs. Most managers have evaluated a number of successful hotel cases of implementing EMPs and point out that the problem of those cases is that they do not contain specific information on how to introduce EM programmes. They complain that there is little practical

experience included in the literature to explain how those cases worked to improve environmental performance. As a result, most managers feel no "real" benefits can be gained from EM and everyone is just talking. This finding could extend to the statement of Kirkland (1999) and Tzschentke et al. (2004) that the costs of implementing EMPs could be increased if managers' knowledge and experience are limited. Therefore, similarly to the literature (e.g Hind et al., 2009; and Dahlmann et al., 2008), this study suggests that the creation of a competitive advantage for Organisations relies on knowledge-based skills, and employees' knowledge and experience.

Due to lack of knowledge, the hotel group has received assistance from external experts to implement EM programmes, and believes that external experts can contribute a great deal in making practical knowledge and affordable education and training programmes available. This study thus supports the literature (e.g. Medley, 1997; HCIMA, 2003) which states that Organisations could search for professional help to offer training and information courses specific to the work area, and to develop participation systems for employees to contribute more actively in the tasks they perform. Therefore it is believed that third party professionals have greater knowledge of and familiarity with environmental issues and could assist Organisations to build their employees' confidence when it comes to providing possible ideas and suggestions.

In addition, the hotel group is aware that environmental reports and environmental performance measurements could be attested by an independent third party, so that information in financial statements can become more reliable. Some hotel properties have joined environmental related programmes in voluntary associations (e.g. HCIMA), established, not to confirm compliance with legislative requirements, but instead with the aim of recognizing efforts to improve environmental performance over time, given a baseline by an environmental review of the Organisation. Similarly to the literature (e.g. Ruiz-Tagle, 2008; and Zutshi and Sohai, 2005), the hotel group highlighted the need for a continuous cycle of identifying problems for improvement; they also have experts who can help Organisations to assess

performance in relation to the environmental review. The results may then be used by senior management to make any necessary revisions to the Organisation's policy, objectives, targets, action plans, and established systems. Consequently, all environmental related activities could be undertaken by managers internally if there was sufficient expertise available to perform the various tasks adequately. This study suggests that receiving help from external experts could help the Organisation to manage its own environmental performance better. Although third parties have a role in helping Organisations to achieve environmental related objectives, improvement might depend on how well the Organisation is managed overall and how committed the managers are to seeing that real and continuous improvement is achieved.

Through comparison with existing literature, it is believed that hotel Organisations do not need to employ a classic EMS (e.g. ISO). However, managers should have a thorough understanding of EMS applications and sufficient knowledge to implement EM programmes to achieve business objectives.

7.3 No relationship between EMPs and accounting information

It appears that opportunities to cut costs by introducing environmental initiatives did not encourage managers to link environmental initiatives to the accounting control system within the hotel group. This study reveals that there is no relationship between EMPs and accounting information and the fact that attention to integrating environmental issues into accounting is not yet paid in medium and small size hotel Organisations. Evaluation of three areas shows there is no link between EMPs and accounting systems: analysis of environmental related costs in the accounting system, monitoring EMPs, and environmental performance measurement.

7.3.1 No integration of environmental issues into hotel accounting

This study reveals that there is little noticeable environmental impact on

financial statements and little appears in the way of explicit mentions of environmental issues within the statement of accounting policies in relation to environmental performance. Although the hotel group allocated utility costs to the overhead account, overhead is not wholly attributed to a single business process; the evaluation of the hotel group's accounting system supports Sarkar's (2006) view that no particular environmental related information is shown in the profit and loss account, or even other accounting control systems. As discussed in WRI's report (2002), the misallocation of environmental related costs could result in a missed opportunity to bring these costs to the attention of business stakeholders who may be able and motivated to identify ways of reducing or avoiding them while improving business performance. Moreover, the finding confirms Bruns' (2000) statement that most managers thought that the reduction in utility costs was small and insignificant on average so that was why utility cost was regarded as an overhead cost in the profit and loss statement.

Although Stipanuk (2002) and a number of hotel cases (see IHEI and IH) demonstrated that decreased use and less waste of utilities are environmentally preferable, reducing both environmental degradation and consumption of non-renewable resources, none of authors or managers have seriously looked into the issue that utility costs have been misallocated in the overhead account. This finding is not in line with the view expressed in the literature (e.g. Richardson, 2004; Schaltegger and Burritt, 2000) that environmental related information should be addressed in the traditional accounting system in order to show relevant benefits of integrating environmental issues into business practices. Thus, it is obvious that allocation of utility costs needs to be reassessed by Organisations and managers should factor these costs into business decisions, whether or not they are viewed as an "environmental cost". Otherwise, the distribution of utility costs, particularly related to EMPs, in the overhead account will not help managers to obtain the maximum reduction in operating costs.

In short, it is found that environmental actions in the hotel group have been slow to be reflected in the accounting system and most managers still have

difficulties reflecting environmental related activities in their accounting systems and have no idea about any environmental accounting systems with which to report environmental related information to their stakeholders, e.g. GRI, AA1000 and SA8000. However, the hotel group does not choose to ignore the importance of integrating environmental issues into its accounting; instead they are now aware of the difficulties of such integration and, in line with Hooper and Greenwall (2005) and Bartolomeo et al. (2000)'s suggestions, they plan to improve environmental performance in some areas (e.g. including environmental issues in annul report). Moreover, the finding confirms the conclusions of Howes (2004) and Watson and Emery (2003) that most UK Organisations are not reporting their environmental performance and supports various authors' (Chatterjee and Mir, 2008; Smith et al., 2007; and Yusoff et al., 2006) studies which show that the relationship between financial performance and environmental reporting is difficult to identify. Thus the hotel group needs to take a look at extant reporting systems so that they can obtain some of the benefits indicated by authors such as Chatterjee and Mir (2008), Branco et al. (2008), Raar (2007), and Al-Tuwaijiri (2004).

Still, managers would hardly be aware that anything related to environmental activities was happening by looking at business' financial statements and annual reports. At the same time, most managers playing at ostriches seemed to have a reasonable, even responsible, attitude to start with, and now they are aware that not linking environmental issues into accounting systems is increasingly professionally indefensible. Regarding accounting for the environment, it is not an easy task to integrate it into traditional accounting systems and the development of environmentally integrated accounting systems through industry initiatives is not yet clear. Therefore, an attempt will be made with this study to show that Organisations could improve their accounting systems by looking into environmental issues, in the light of the confusion of some costs in the overhead account with those in the traditional accounting system.

7.3.2 Lack of monitoring and benchmarking activities in implementing EMPs

The findings show that collective track records on keeping numerical figures about environmental performance was not impressive in the hotel group, because it does not document routine checkups and identify any modifications, even though recording some monthly utility information has been attempted. The hotel group attempted to measure its environmental performance but is still not identifying environmental related costs which would enable management to better understand the environmental costs and the performance of processes, allowing more precise costing and savings. The evaluation of the group's EMPs revealed that there is almost no link between environmental related practices and monitoring activities in the accounting system and most information and decision systems do not currently support the integration of environmental related information into business decisions. The findings support Epstein and Wisner's (2005) statement that the hotel group does not have an effective control system to monitor environmental performance and reinforces Schaltergger and Burritt's (2006) argument that monitoring of EMPs is needed if managers expect to improve their environmental performance. Hence this study suggests where monitoring of EMPs could provide opportunities to managers to reduce costs, and managers will then presumably be wiling to implement the monitoring system, as this would have an impact on the business's financial performance.

There is a gap between managers' understanding of the importance of using performance measures, and the actual performance measures used; an inappropriate performance measurement could be a major cause of failure in the implementation of EMPs. The findings suggest that most managers appear more concerned with control through budgets and achievement of profits than with creating a more formal form of measurement system. Moreover, there are no current requirements from government forcing hotel Organisations to measure and report relevant environmental issues or the extent to which their activities are in harmony with standards of environmental management. Similarly, environmental regulations literature fails to address deeper problems

in relation to environmental issues in the hotel industry. This study draws attention to the fact that the hotel group has given little attention to the measurement of environmental performance and it is crucial that Organisations initiate the monitoring of environmental performance as part of implementing EM programmes to achieve business objectives. (e.g. Makrinou et al. 2008; Waggett and Arotsky, 2006; Rothenberg et al., 2005). However, techniques for estimating those sophisticated environmental related costs are still in their infancy and developing a system to measure environmental performance is a challenge and requires time and careful consideration. Existing techniques to measure environmental performance have varied widely, and improved environmental performance can be sought from the adaptation of accounting techniques to emphasize the reduction of waste and processes redesigned in the quest to reduce operating costs. There are a number of techniques (e.g. life cycle costing and input/output analysis of material flows) that can be used to measure environmental performance, but none of them are developed in isolation from price to consumption. With the assistance of experts, the hotel group realizes that they could reduce operating costs by simply taking some action to reduce utility consumption in various hotels. However, they could not identify how much they have saved by reducing utility consumption and most managers have no idea how efficient they are and whether they are efficient or not in comparison to other competitors. All those questions actually arose out of the problems of monitoring their practices, and why the hotel group is not aware of how well or how badly it is doing in relation to EMPs. Moreover, this study found that certain standards from third parties (e.g. Green Hotelier's water benchmarks) were not updated and precise according to business characteristics and this finding is similar to literature (e.g. Sena da Silva and Dumke de Medeiros, 2004; and IHEI, 2002) which warns that attention has to be paid when using performance indicators. IHEI's water benchmark also still needs to include more information and be more precise about variables in a number of hotel facilities. Therefore, it is suggested that existing water benchmarks should continue to update their information and evaluate their effectiveness, thus possibly enhancing a higher standard of EMPs.

In this study, one question has arisen about whether the mere presence of water benchmarks is an appropriate metric for hotel Organisations. There is a lack of understanding of what collaboration means and what it implies for the development of appropriate performance indicators. This study evaluated a number of benchmarks and finally decided to use three in order to obtain a more objective view of environmental performance. The reason for applying three water benchmarks is in line with some authors' (Bohdanowicz, 2005; and Synnestvedt, 2001) view that hotel managers should bear in mind that existing benchmarking for measuring environmental performance is not necessarily sufficient, alone, for Organisations to achieve superior environmental performance. It is believed that managers should study the nature of collaboration and the characteristics of performance indicators to understand their meaning. For example, there is a problem with Thames Water's benchmark due to the "performance indicators" which have been calculated based on total available bed spaces. This type of water performance indicator seems not to be accurate when it comes to the measurement of water usage based on the amount consumed per occupying guest. Moreover, there is a lack of cost data to measure environmental performance in the hotel group and it is difficult to identify whether the implementation of EM programmes leads to cost reduction. For this reason, the hotel group's attention has shifted to the measurement of environmental performance and it has started to search for professionals to assist in the improvement of environmental performance. This positive attitude towards the measurement of EMPs demonstrates that the hotel group believes what some authors (e.g. Makrinou et al., 2008; Owen, 2004; Boks and Stevels, 2003) have claimed, namely that the measurement of environmental performance could assist managers to obtain more detailed information which could help in making better decisions to achieve business objectives. Thus, it is believed that cost data lead management to undertake preventive actions, which are far less costly than the expenses brought about by damage payments.

7.3.3 No consideration of variables influencing cost data to performance measurement

The findings suggest that analysis into the impact of measurement on environmental performance may be too simplistic in its approach, as much of the case study hotel group relies only on the industry standard, and ignores the types of factors found to be important in influencing performance measurement. For example, size of hotel property and regional location were dimensions of the selected participants. The size of hotel property is found to influence performance in many respects. One important explanation for this is that "smallness" usually implies a weak resource base, which creates different operating conditions. This is in line with literature (e.g. Adams, 2002; McWilliams and Seigel, 2001) which states that the size of Organisations has implications for the scale of measures and available resources (e.g. Lee, 2008; and D'Regan and Sims, 2007). The literature (e.g. Korolijova and Voronova, 2007; and Sena da Silva and Dumke de Medeiros, 2004) also states that the most important feature is that a measure of business performance should be relevant and accountable. There appears to be a growing recognition that the measures of performance that Organisations have traditionally used are inappropriate because of lacking accuracy and not providing data on quality and flexibility. Next to relevance, the study concludes that the case study hotel group wanted size to be one of the most influential factors in the diffusion of performance measurement and wanted a measure that was clearly defined and simple to understand, followed by the need for balance between non-financial and financial indicators, precision and accuracy of calculations.

Also, the findings reveal that due to the adoption of new environmental appliances, adoption of payback period as the traditional accounting practice failed to provide on-time and detailed information. Managers rarely help with the practical realizations of specific measures at an operational level. As Joseph and Francis (2008) indicated, benchmarking water use should refer to the amount of water consumption rather than the water bill because the water bills consists of elements (purpose of water used) such as the actual amount of water consumed and sewage charge. If this type of information is unavailable, modifications to the existing Organisational information systems and procedures can be made to ensure the availability and accuracy of such

information. In conclusion, if these problems are not handled properly, there is a major risk that the information from measurements will be distorted. There are several questions left to decide in order to achieve the goal of performance measurement: how each performance measure should be specified, how often it should be measured and at what level of detail? These questions assist managers in realizing what to measure. It seems that this study supports what Joseph and Francis (2008) have claimed - that variables, such as quality, age and occupancy rate of hotel are potential factors affecting the costs of operating and maintaining the facilities – and its conclusion is the belief, in line with literature (e.g. Haktanir, 2006; Burgos-Jimenez et al., 2002), that environmental targets should become part of the measurement system in achieving business objectives.

It seems that the case study hotel group has a long way to go to achieve "environmental excellence" in terms of its accounting system. Moreover, the hotel group does not use existing accounting techniques for monitoring environmental performance and this creates a lot of difficulties in identifying the influence of EMPs on the business's financial performance. The literature (e.g. Blengini, 2008; Bhaskaran et al., 2006; Ackerman et al. 2004; Wilco et al., 2001; Letmathe and Doost, 2000) has discussed a number of techniques and none of these has been used in the hotel group for monitoring environmental related activities. However, this study attempted to apply the standard costing system to monitor environmental related costs and the results are discussed in the following section.

7.4 Findings from adopting variance analysis for monitoring environmental performance

Certainly an understanding of the various issues and aspects of implementing EMPs is needed to encourage managers to minimize the variances from standard. Most managers found typical financial reports in relation to environmental performance difficult to understand which leads to frustration and dissatisfaction. As a result, traditional performance measures to improve

environmental performance are often ignored in practice. It is vital that the importance of each measure in improving environmental performance should be clearly understood so they can be properly used. In this study, the findings show that the hotel group's business performance indicators have made comparisons of cost statements with the previous month, the average of previous months, or the corresponding month in the previous year, but such comparisons do not include changes in prices and quantities of services. Therefore, the adoption of variance analysis seen to be a means of providing detailed information for managers to make decisions in a better way. The variation between the actual realized cost and standard cost potentially represents losses through unwise resource use or increases due to unanticipated causes. It is therefore recommended that comparisons be made with standard costs, and not with those of previous periods.

According to the literature (e.g. Sulaiman et al., 2005; Harris and Hazzard, 1992), when a variance occurs, the reasons can be studied and immediate corrective measures may be undertaken to improve performance. Action can be taken in spotting weak points, enabling a cost control system which enables and provides useful information to management taking important decisions. This study suggests that the information is useful for three roles in an Organisation. First, it helps purchasing managers to determine if the Organisation should take advantage of price reductions available through economic order size, and to obtain data regarding the availability of materials. The purchasing manager thus has specialized knowledge about the likely cost of material and resources. Second, it helps engineers to specify the types and quantities of material required, establishing, in conjunction with front line managers, any allowances for scrap, shrinkage and waste. Third, it assists financial controllers to monitor and review all information regarding material and resources used and determine application rates for indirect costs such as material handling and overhead costs.

This study attempts to recommend that variance analysis could be regarded as a system to assist various managers to measure and monitor business practices, providing opportunities for managers to learn and improve business

performance by identifying the gaps. Such gaps can be good or bad because good gaps are where an Organisation is outperforming its competitive set while bad gaps are the opposite. Therefore, appropriate performance measures can ensure that managers adopt a long-term perspective and allocate an Organisation's resources to the most effective improvement activities. However, there are numerous performance measures to select from, which in turn fulfil different purposes and it is important that the right ones are chosen

7.5 Findings about the integration of EM into business management in general

This study explores the fact that there is growing pressure over environmental issues, and changes in the hotel group are clearly visible, with increased governmental pressure, opportunities for cost cutting and exploring a new market. This finding agrees with secondary sources (e.g. Hospitality Net, 2008; Green Hotelier, 2006, 2007; IHEI, 2003, and HCIMA, 2006, 2007) stating that a number of hotel Organisations regard cost reduction as the main motivation to integrate environmental issues into their business management. This section discusses how managers are integrating environmental issues into business processes.

7.5.1 The influence of business strategy on implementing EMPs

A general debate over the relationship between Organisations and environmental issues has taken root in the business world. It is a wrong perception to assume that environmental concerns are a cost; instead, EM is a more effective operational strategy to manage business in a better way. In this study, an attempt at integrating environmental related activities into business strategy is another objective for the hotel group to reduce cost, which in turn enhances the shareholders' profits. From a competitive standpoint, the hotel group aims to lower operating costs beneath those of their competitors so they can gain a significant competitive advantage. The finding is in line with a

number of authors' (e.g. Anon, 2007; Gonzalez-Torre and Perez-Bustamante, 2006; and Porter and van der Lind, 1995) views that improvement of environmental performance could arise from the integration of environmental requirements into business strategy and processes. Most importantly, the factor of reducing costs has compelled managers to integrate environmental issues into their strategic planning processes so that the hotel group could link environmental issues to hotel operating costs and their strategy of implementing EM could assist managers to achieve an overall business objective. Hence, it is believed that environmental objectives will drive Organisations in a preferred strategic direction and environmental objectives can be tailored to existing business strategy and business practices, which would facilitate the implementation of EM programmes.

However, the integration of environmental issues might occur at different levels of strategy depending on managerial perceptions of their importance. Unfortunately, this study explores the hotel group integrating environmental issues into business strategy only at the head office level, and most environmental related actions occur only at the top management level. The majority of hotel managers at the bottom line are not as active as the top management team at the head office level about environmental issues because of different levels of awareness toward the issues. There seems to be a relatively low engagement between environmental issues and business strategy and this study confirms some authors' views (Elijido-Ten, 2007; and Penny, 2007) that different managers' perceptions and attitudes toward environmental issues may lead to different environmental strategies. Therefore it suggests that these different degrees of attitudes toward integrating environmental issues into business strategy could influence the results of EMPs.

It is important to note that the lack of long term tracking of the efficiency of advanced technologies might result in a reverse influence because of malfunction of some technologies in the longer term. To extend Griffith and Bhutto's (2008) view and support Dalhmann et al's (2008) statement, the hotel group's integration of environmental issues into business strategy is not

complete and this integration seems to be a reactive approach, and lacking in monitoring activities of EMPs, which might not improve environmental performance. Thus, it is essential for a proactive Organisation to track practices of investing in new equipment and developing a more competent environmental strategy in order to improve the efficiency of business practices which in turn enhances profit. In addition, the hotel group's EM programmes are not as developed as the more competent EM programmes in some international hotel groups, e.g. Accor group and Razidor. Further to this, the hotel group's focus in their EM programmes is on reducing operating costs and resources used and nothing was found to improve the relationship between the hotel group and society. Therefore, it is not surprising that the hotel group would not have the same results from implementing EM programmes as those international hotel groups. This finding could extend some authors' point of view (Lesourd and Schilizzi, 2001; Vaughan and Mickle, 1993) that Organisations impacted on by environmental pressures more significantly than others need to be more proactive in managers' response to environmental issues.

This study reveals that the implementation of EM programmes in the hotel group is not as thorough as in some international hotel groups (e.g. Accor). The hotel group may rely on voluntary associations (e.g. IH) but it is ready to adopt a more comprehensive system which will encompass crucial elements. Most hotel cases evaluated and included in the literature are international hotel Organisations or large size hotel Organisations (e.g. Accor and Hilton group) and most EMSs are developed according to the needs of international hotel Organisations, so little information has focused on small and medium size hotel Organisations. In order to avoid confusion while applying existing EMSs, Organisations should develop their environmental strategy and adopt any EMS according to their business characteristics and structure. Therefore, a coherent planning effort is needed to align environmental strategy to business structure, which will lead to better environmental performance.

7.5.2 Lack of communicating environmental related information

This study has not found adequate communication of environmental related information within the hotel group. Most managers are not aware about the clarity of environmental reporting in communicating the central environmental factors in the business, and this is contrary to Matthews's (2003) statement that managers should know that the completeness of such reports is essential for communicating EMPs throughout the whole Organisation. However, for the hotel group, it is not an easy job to give their stakeholders confidence that they have a comprehensive picture of the important aspects of the Organisation and environmental performance data which have been selectively evaluated in the annual report. Moreover, the hotel group did not use any form of accounting information to communicate with its stakeholders about how the hotel group is performing in relation to EMPs. The literature, though, discussed available international standards (e.g. GRI) which could be used by Organisations to implement EM programmes and communicate with stakeholders about how they perform in relation to environmental issues. The link between environmental initiatives and accounting systems is affected by how managers want to report to stakeholders. Unfortunately, most managers appeared to be constrained by financial requirements (i.e. achievement of profits), and it is found that many managers assume improvement in environmental matters is at the expense of profits. Hence, the communication of EMPs with stakeholders is not a priority; this finding differs from the secondary sources (e.g. Mensah, 2004; Razidor, 2008), but confirms Sloan et al.'s (2004) study which found that the communication of environmental performance between head office level and bottom line level and stakeholders is lacking, and that efforts did not combine theoretical work and practical experience. This finding is in line with what the literature (e.g. Kolter et al. 2005; Matthews, 2003; Papmehl, 2002) points out about the importance of having management leadership, commitment, and support from employees, and about a clear business vision and mission statement needing to be communicated. Therefore, it is important for senior management to initiate the communication of environmental performance and translate environmental missions into business objectives with regard to Organisational structure, resources and constraints.

Also, lack of communication of environmental information could result in the wrong perceptions about the influence of EMPs on business performance. It was found that bottom line managers are not aware of the hotel group's environmental project, and environmental performance is not communicated between hotel group and individual hotel properties. This finding confirms the literature (e.g. Seitel, 2006; Chinander, 2001; and Ramus and Steger, 2000) which argues that communicating environmental information could ensure employees know their responsibilities and understand the link between their performance outcomes and rewards in environmental endeavours. Hence, it is believed that communicating with employees could raise their awareness about benefits and problems of EM within the Organisation. However, it is important to note that the attitudes of managers toward the communication of environmental issues exert a decisive influence on their Organisational environmental behaviour; empowered employees are motivated and committed to participate in and engage with good EMPs.

Moreover, there are three factors associated with the lack of communicating EMPs: low-level managers' attitudes, the lack of incentive programmes, and centralized EMPs.

- **Managers' attitudes are poor and awareness is low**

It is critical to give managers the ability and the responsibility to take active steps to identify problems in the working environment that affect business performance, and to deal with environmental issues effectively. The hotel group has not really appointed environmental related tasks to individual hotel managers and most hotel managers are not aware of their responsibilities in terms of environmental initiatives, in order to achieve business objectives within the hotel group. One major problem found in this study is the various attitudes of managers towards environmental issues at different levels. Some bottom line managers considered that an EM programme is something extra they are required to do and the reason for this is because they think that EM is

important but not vital to the company's existence. Similarly, some general managers are happy to look for cost cutting opportunities as long as these do not require expense or take too much time. However, unless the environmental issue is recognized in a more positive way by the top management within the hotel group, accountants will not be able to introduce measures based on both business and environmental criteria. The reason why accountants have this passive attitude toward environmental issues could be that they have not been informed and communicated with about what their hotel group is doing in relation to such issues. Consequently, they have no idea that the implementation of EM programmes could provide opportunities for cost cutting and even other intangible benefits. This reason is consistent with a number of authors' point of view (e.g. Deegan, 2002; Wilmshurst and Frost, 2001; and Power, 1997) that most accountants do not consider environmental issues as an important matter in business improvement because they are rarely involved in the process of implementing EM programmes. Moreover, the finding seems to reflect the view of various authors (e.g. Elijido-Ten, 2007; Penny, 2007; Lindell and Karagozoglu, 2001) that managers' attitudes affect the degree of EMPs, and is line with the literature (e.g.Dahlmann et al., 2008; and Zutshi et al., 2008) which says that most managers would not consider environmental issues to be a priority and that this is a challenge for Organisations implementing EMPs.

It is difficult for the hotel group to create environmental awareness among its employees when it is operating in a place where environmental related information has hardly been heard of, resulting in a general lack of transmission of environmental issues. Not surprisingly, managerial perceptions of environmental issues varied quite significantly across the hotel group depending on the extent of communication of environmental issues through the Organisation. In this study, managers have more responsibilities at the head office than managers at the bottom level; consequently, top management has a higher degree of commitment and more active attitudes toward environmental initiatives. This finding confirms a number of authors' argument (Hind et al., 2009; Karlson and Imrell, 2003; Steer, 2002) that commitment is higher when employees have broader responsibilities and more experience to

improve environmental performance.

- **Lack of using an incentive programme to motivate and train employees**

In order to achieve long-term success, business practices need some form of incentive programme for continued improvement, and the success of an EM programme relies heavily on the way its ideas are internalized by various managers. While incentive programmes could have an impact on employee productivity and retention, frequent and effective communication within incentive programmes is important to keep employees focused on their goals as well as to reengage them in the programmes. However, the findings suggest that the hotel group does not use incentives to motivate managers or employees in relation to environmental performance. This might result in a loss to the Organisation because they cannot use incentives as a marketing tool or as a motive for managers to improve business performance. Although one hotel property has developed rewards programmes, there is no specific reward for environmental improvement. This finding differs from what some authors (e.g.Dahlmann et al., 2008; Parker and Wright, 2001; Patton and Daley, 1998, Leitch et al., 1995) have indicated - that using an incentive strategy could provide opportunities for Organisations to influence managers' attitudes toward environmental issues.

Moreover, this study is in line with literature (e.g. Parker and Wright, 2001; Epstein and Roy, 1997) which argues that lack of rewards could result in missing opportunities to motivate employees to achieve business goals; it is suggested that the hotel group should improve its EM programmes by communicating objectives more regularly, so that employees know what is expected to accomplish the goals, and then developing incentive programmes to motivate employees to participate in EM programmes. In addition, compared with the implementation of EM programmes in some international hotel chains (e.g. Accor and Razidor), the hotel group did not use their resource (people) to implement EM programmes more efficiently, and most managers were not

aware of the hotel group's objectives for improving environmental performance. Thus, this study suggests that the goals of EM programmes should be clearly communicated in order to provide a strong sense of motivation, as specific goals increase performance. There also needs to be an expectation of obtaining the goal: even a highly valued goal will not work as a motivational tool if the expectation of successfully reaching the goal is very small.

Further to this, most managers agree about the need to motivate employees and change their attitudes toward environmental initiatives, but the incentive must be equitable for all participants because an employee constantly compares his or her job with peers. If the reward is only realistically accessible for the minority of managers, the majority will not participate and the results may even be detrimental. Most managers are aware if the employee perceives inequity, he or she will act to correct the inequity by lowering productivity, reducing quality, increasing absenteeism, or even quitting. In addition to equity, they have indicated that an incentive should have a high perceived value to the participant so he or she can become emotionally involved in obtaining the goal. This study supports literature (e.g. Hope and Fraser, 1997; and Peattie and Ring, 1993) that claims that, though research about managers' attitudes toward environmental issues was only focused on the top management level, motivation, however, involves equity. It is inherent for all employees to want what they are not offered or what is beyond their reach. When the objective is motivation, the importance of hope based on desire should never be underestimated. Thus, it is believed that regular and effective communication of benefits and rewards to all employees at all levels and operating with a well established communication system in place are integral parts of a successful incentive programme.

In short, motivation is the key and is triggered by employees' self-fulfilment because employees need to feel valued and appreciated not only for visible output but also for learning on the job, and generating, and generalizing knowledge that improves the learning curve of the Organisation. Therefore, investment in employee training is needed in order to adjust the knowledge of employees to the changes in operational processes resulting from the

introduction of environmental performance.

- **Centralized environmental management practices**

Similar to literature (e.g. Desmond and Yuen, 2004; and Chinander, 2001), hotel employees and managers have a good deal of responsibility and authority to make many types of decisions without the approval of higher levels of management. However, Organisations can be characterized as centralized or decentralized depending on the extent of the responsibilities granted to managers. Both centralized and decentralized characteristics have been found in communitcaing EMPs within the hotel group, but most managers thought that a decentralized approach could promote better decision making because they are better able to gather and evaluate information than centrally located top level managers. Also, bottom line managers can act quickly because they do not need to report to headquarters and wait for approval of their proposed actions. However, the evaluation of environmental related investments showed that bottom line managers act less freely and most decisions are made at the head office level and are not communicated throughout the Organisation, and this could be deemed to be centralization. This finding is in line with Seitel (2006) and due to the business strategy of an expanding hotel group, important investments are mostly associated with centralization. Of course, every hotel property has received a certain budget to improve daily operational business performance.

Environmental related decisions are made at the head office level and environmental related projects are managed centrally. The reason for this centrally driven approach is that EM is not a central programme and is regarded as a new programme of business management in order to assist managers to achieve business objectives. Besides, most managers have discussed the fact that an effective decentralizing process of integrating environmental related activities into the accounting system would be dependent not only on the finance and accounting personnel but would also involve an Organisational team effort, and most importantly management

efforts. However the majority of literature was focused on the management level (e.g. Tzschentke et al. 2004; Lesourd and Schilizzi, 2001; Hope and Fraser, 1997; Tsai and Child, 1997), and little literature has indicated that decisions about investing in efficient appliances should be integrated into different levels of management in order to obtain different aspects of environmental related information. Therefore, this study suggests that utilizing a decentralized EMP could raise the awareness and participation of various levels of employees within the whole Organisation.

7.6 Summary

This chapter discusses some important findings by comparing the literature and primary data. This study attempts to shed light on the importance and purposes of implementing EMPs, and the relationship of this with financial performance in the hotel Organisation. The major implications of this study are as follows.

A. Developing Organisation-based EMS

The formal requirements of an EMS (e.g. ISO) may be simultaneously too complicated and vague for medium and small Organisations. No formal EMSs could have been tailored to suit the needs of all types of hotel Organisations, so hotel Organisations may still encounter a lack of clarity as to what exactly is required for an effective EMS in certain specific conditions. It is believed that a formal EMS should be fundamentally revised according to business characteristics and objectives in order to achieve effective improvement of EMPs.

B. No relationship between accounting system and EMPs

Currently, there is no accounting system devoted to environmental issues in the hotel group, in spite of managers being aware that environmental legislation is an important consideration in assessing business performance. In

addition, neither report contained suggestions for extending requirements on improving environmental performance, and the worst part is that the group's environmental target was not recognized in the performance measurement system operated by the hotels. Although the findings in general seem encouraging, examining the detailed financial figures raises some concerns about the way in which EMPs actually support and encourage the more effective management of environmental performance.

C. Importance of tracking and monitoring cost and resources use

Cost control of EMPs alone will not show whether a utility is being used efficiently or how it can be used more efficiently. Therefore, tracking and monitoring are needed to provide qualitative information for managers to improve environmental performance, but they are separate activities and have different purposes. Tracking is to record utility use which allows tight budgetary control over an Organisation's utility usage. However, monitoring implies closer measuring of utility use which allows managers to identify the relevant standard of utility use. Most importantly, this study suggests that managers should identify the appropriate benchmarking standard in order to make improvements of both cost control and efficient resource use based upon the industry "best practice".

D. Adoption of variance analysis helps to obtain more useful information for various managers

This study attempts to apply an accounting technique – variance analysis - to isolate consumption from price, and the results show that managers could obtain more detailed information as a basis on which to make decisions. It is critical for Organisations to have accurate estimates of environmental performance to help managers in targeting cost reduction activities that can also improve business performance. In general, consumption and cost indicators can be used by virtually all managers; specifically, consumption indicators can be used by engineers and that information is more meaningful than cost indicators when undertaking the maintenance of equipment. Besides,

cost indicators are more useful to accountants because they can analyze if environmental goals have been achieved or not; if not, then accountants can report to their managers in order to take corrective action.

E. Need to align environmental objectives with business strategy

The pursuit of EM in the hotel group appeared to be part of its business strategic management, but it is important to reveal that the hotel group tends to neglect the operational aspect of the EM concept. There are unclear environmental objectives which cannot be evaluated precisely, and the environmental objectives tend to differ in their degree of business strategy. This study stresses the importance of integrating environmental issues into business strategies that could help managers to improve business performance. This integration can be seen as a way to make sure that environmental care is not singled out from routine business practices. It is believed that "low" environmental performance puts less emphasis on integrating environmental issues into business strategies and therefore it is suggested that hotel Organisations should consider environmental issues when developing their business strategies.

F. Lack of internal expertise (knowledge) to establish an effective environmental management

Unlike in international Organisations, it is believed that the complexity of environmental issues and stakeholders associated with an Organisation's environmental impact is frequently underestimated in medium and small size Organisations. This can lead to responsibility for the implementation of EMS being given to managers with little or no experience of environmental issues. Hence, this study reveals that the awareness and knowledge of managers of environmental issues play an important role in the Organisation's environmental performance. Also, managers' awareness of potential environmental related benefits and knowledge in communicating environmental issues will be the significant determinant of the success and survival of the Organisation in the long term.

Chapter Eight Conclusions

Chapter eight summarizes the main findings of this study and draws out the implications of implementing EMPs in the hotel industry. It thereby aims to enrich the understanding of this specific industry while integrating the accounting aspect into EMPs. Four key findings are highlighted about how the participating hotel group control and monitor EMPs and consequently three contributions to knowledge are presented. Most importantly, a number of limitations and learning outcomes are identified through problems this research ran into, issues that affected the course of the research or ways in which the research process turned. Finally, areas for further research are discussed and several practical practices in relation to EM are recommended for the participating hotel group to improve its environmental performance.

8.1 Key research findings

It is believed that implementing EMPs can be seen to provide an opportunity to improve financial performance. Four key findings are identified to answer the research questions and achieve the research aim which was to enrich understanding of how a hotel Organisation could manage and control EMPs to improve environmental performance and finanical performance.

8.1.1 Integrating technical and financial aspects into current EMS

Although there are probably numerous ways of improving business performance, there is one option the hotel Organisation may not have considered – reducing hotels' resource consumption. No matter how Organisations view environmental issues, EM is becoming an integral part of the business objective to improve financial performance. Although EM may motivate businesses to make changes in their business operations and trigger technological innovation, EMSs can take many forms and are as different as the many Organisations that implement them with different objectives and business structures. Therefore, managers should not use the mere presence

of an EMS as the metric for differentiating between organisations and improving environmental performance. A more competent EMS is needed for the hotel industry, especially when there are still a number of challenges to implementing EM programmes. Since innovation in technologies seems to be an important factor in today's business environment, it is of interest to evaluate EMPs from the technical aspect. It is noteworthy to indicate that an EMS may fail to assist managers to implement EM programmes if the EMS is not integrated with maintenance systems within the Organisation. Hence, it is concluded that successful EMPs should incorporate a thorough analysis and review of how each piece of equipment is used and operated. Moreover, it needs a well defined operation and maintenance programme for engineering staff, so that waste may be avoided and oversupply reduced; and also the education and training of engineering staff so that they are aware of everything that may significantly affect resource use.

In this study, it is believed that hotel Organisations ought to develop their EMS according to their business objective to control resource consumption, which may provide another opportunity to reduce operating costs when managing and controlling EMPs properly. Thus, for Organisations that have cost as a competitive priority, this research may provide some insight into the relationship between financial and environmental improvements. By documenting the extent to which EM results in an improved bottom line, this study expands the research domain for those studying sources of bottom line and environmental performance improvement. Moreover, investment project decision-making requires the calculation of different profitability indicators like Net Present Value (NPV), Payback Period (PBP), and Internal Rate Return (IRR). Recognizing environmental costs and benefits is important for calculating the profitability of environmental related projects. Without these calculations, management may arrive at a false and costly conclusion; thus, care in selecting performance indicators is critical factor to obtain the right accounting information for managers to improve environmental performance. As result, this study concludes that integrating the financial aspect and the technical aspect into the development of EMS could enable managers to control EMPs toward a contribution to the bottom line.

8.1.2 Enhancing the interaction between EMPs and accounting systems

There are several elements that should be considered to enhance the interaction between EMPs and accounting systems. First, benchmarking is primarily about learning, and not about ranking, and to maximize the value of benchmarking and monitoring, indicators must be designed to minimize the influence of extraneous factors that are not related to environmental performance. Most importantly, measuring environmental performance requires the use of indicators that can be followed over time, and confidently related to current and past performance. Also, it is important to point out that indicators should not be too complex to understand, which would result in difficulty of effective use. Otherwise, managers could use false indicators in measuring their performance and obtain the wrong information in relation to EM. Ultimately, the purpose of developing performance indicators is to facilitate decisions about an Organisation's performance and one of the key challenges of developing indicators is that every business is different. For example, the factors most relevant to the environmental performance of a chemical Organisation are different to those of hotel Organisations. While it is tempting to presume that there could be a universal set of indicators that would apply to all businesses, in practice the environmental aspects and values of an Organisation's activities depend a lot on the specific nature of its business.

Second, integrating environmental issues into accounting is not solely an accounting issue and the information needed is split up between all different levels of managers; these need to communicate with each other to assemble cross functional teams in order to develop a common vision and language. Environmental reports can be used as an excellent means of measuring EMPs and communicating relevant information not only with employees at all levels but also external stakeholders. However, managers have to be careful not to let their environmental reports become one way monologues, and should develop two way communication tools to acquire views and ideas from both Organisation and stakeholders. More specifically, all employees at all levels should work to set standards so the programme can be applied uniformly throughout the Organisation to ensure effective measurement of performance

and strengthen linkage between different levels and departments within a given scope of responsibility. It can be stated that the pattern of communicating about and enacting management accounting systems within the Organisation has a critical role in influencing the improvement of environmental performance.

Third, while evaluating capital investments aiming at improving environmental performance, it is important to fully consider environmental related costs and cost savings that will assist in demonstrating the financial viability of more investment in advanced technology. Similarly, it is critical that managers take environmental considerations into account at an early stage because available information about environmental related costs and environmental performance can facilitate managers to make capital budgeting decisions on environmental related investments.

8.1.3 Isolation of consumption and price

Needless to say, effective analysis of consumption and price is the key to managing a resource shared between various users and managed by different levels. Therefore, this study considers the importance of having consumption and price measured separately in order to produce more detailed information for various employees, e.g. accountants and engineers. The findings of the standard costing variance technique show that the total water cost decrease could be the result of either decreasing water prices or decreasing water consumption. Therefore, this study concludes that hotel Organisations should manage and control EM not only in terms of consumption variance but also of price variance. However, it is critical that managers establish the level of variance that should be investigated. Some variation from expectations is allowed, and if standards are realistic, much of the variation is eliminated over the period of a year—that is, insignificant favourable variances cancel out insignificant unfavourable variances. Variances that are determined to be significant need to be investigated. Careful discussion with key employees (e.g. engineers and accountants) involved in producing the output that led to a

variance can aid in assessing what circumstances appear to provide the explanation. Consideration of what should be done in the future can lead to the elimination of significant variances. In an objective review of evaluation of water bills and discussions with managers, questions may arise as to the appropriateness of the standards established. There may need to be a reconsideration of the available standards for the hotel industry that were the basis for the standards used by hotel Organisations.

In addition, standard quantities of inputs can be established based on ideal performance, or on expected performance, but are usually based on efficient and attainable performance. It is believed that most managers and employees will exert the greatest effort when goals are somewhat difficult to attain, but not extremely difficult. If goals are easily attained, managers and employees might not work as hard as they would if goals were challenging and there may be an unnecessary waste of resources. But also, if goals appear out of reach, managers and employees might resign themselves to falling short of the goal, and become so indifferent that their work quality deteriorates significantly. For this reason, standards are often established based on efficient and attainable performance. Therefore, the goal of the personnel responsible for setting standard costs is to provide realistic standards because both managers and employees are to be motivated to achieve output in accordance with specified standards. Hence, a standard is characterized by a certain amount of rigor in its determination, and by its ability to motivate managers and employees to work towards the Organisation's objectives for production efficiency and cost control.

In sum, the details of consumption and cost saving, as well as of the possibilities and limitations of the resources are needed to manage them effectively; and this requires sharing both indigenous and modern scientific knowledge, as well as establishing a communication channel between various departmental staff at different levels. With the right accounting information, appropriate strategies can be formulated to deal with the realities of resource management.

8.1.4 Knowledge and support from top management team

While it seems obvious that a critical factor in implementing EMPs to meet Organisations' business objectives should be to understand what those objectives are, the identification of the environmental driving forces affecting an Organisation allows for their use in obtaining commitment from managers. This study reveals that implementation without commitment and knowledge at the top management level is problematic, because most hotel managers have not adequately thought through the practicalities of implementation, in terms of the resources required and the difficulty of their incorporation into hotel management structure. Thus, this study concludes that a successful EMP should have the support of top management and this support ought to be in the form of a written policy or vision statement that summarizes the key points. Moreover, without knowledge from managers, the implementation of EMPs may fail.

Training is an important factor in obtaining relevant knowledge to improve environmental performance. Hotel managers need to develop further management skills and techniques to implement certain environmental projects and some managers may think that decentralization automatically means pushing all decisions to lower levels in an Organisation, whether or not employees at the bottom level have skills to make decisions wisely. With some decisions, no matter how much information managers have, they still need special skills or knowledge to make the right choices. Moreover, managers need external help in improving environmental performance as environmental related skills are not widespread and rarely available internally. Therefore managers should go beyond the usual key stakeholders and obtain knowledge from experts in environmental related areas or recruit people whose skills and knowledge will contribute most to their current environmental related activities. Moreover, effective communication is required to convey information and knowledge to where it is required. Once a certain level of awareness is reached and there is a commitment to addressing environmental issues, so it becomes important to spend time and effort to train employees at all levels about why it is important for Organisations to improve environmental

performance.

8.2 Contributions to knowledge

Three contributions to knowledge on EMPs are made by the key research findings stemming from investigation of the ways in which EM is prepared and implemented by managers and affected by influential factors.

8.2.1 Contribution to the generic EM literature – a more competent EMS for the hotel industry

The various influential factors in an EMS have been evaluated and identified in order to come to conclusions about a set of theoretical and practical implications concerning the implementation of EMPs. The peculiarity of EM seems to depend on the fact that technical dimensions and financial aspects are highly related to each other because some environmental requirements challenge how Organisations manage their resources more efficiently. This study concludes that there is a need for a more competent EMS through linking financial performance to technical aspects and knowledge and support from the top management team. It also requires a continuing refinement of accepted approaches to managing EMPs, as well as exploration of innovative alternative systems for accomplishing policy goals. Hence, the contribution to the generic EM literature is the development of a more competent EMS that includes multiple dimensions of technical aspects and financial perspective, drawing upon insights gained from the hotel context.

8.2.2 Contribution to generic environmental accounting management

This study concludes that interaction between EM and accounting systems is needed to obtain meaningful information about EMPs and this is particularly valuable considering the fact that the relationship between EMPs and accounting information is still an obscure area of accounting control research.

Thus, it is important that managers develop performance indicators such as the existence of a corporate environmental policy, concrete evidence of measures taken to improve the environment, and the communication channel for transmitting environmental information to key staff. It is believed that performance indicators can be obtained by linking EMPs to accounting information. Particularly, managers should pay attention when allocating environmental related costs in the overhead account because if the overhead is allocated incorrectly, some may bear an overhead allocation greater than warranted while others may accept an allocation smaller than their actual contribution. Thus, the result could be a wrong costing which might affect profitability; alternatively, some overhead costs may not reflect at all in relation to environmental performance. Most importantly, detailed accounting information in relation to EMPs provides potential areas (e.g. allocation of resources used and capital investments) for managers to improve environmental performance and financial performance.

8.2.3 Contribution to environmental benchmarking management

The third contribution is the enhancement of knowledge on generic benchmarking measurements, resulting from identifying the effectiveness of monitoring EMPs and isolating the consumption element and the price element. Most importantly, the first attempt at applying variance analysis to evaluate utility usage and price provides an insight view not only for managers but also for accountants and engineers. A number of authors have advised Organisations to integrate EM into their business operations, but some Organisations still focus on ensuring their EMPs meet regulatory standards. These EMPs can have results only outside of the decision-making process for business operations; consequently, EM is not regarded as another opportunity to enhance profit. However, this study obtained knowledge of how to measure and benchmark EMPs to assist managers monitoring environmental performance which in turn to contributes to cost saving. Thus, this study develops a framework which adopted from variance analysis technique, to assist managers to monitor EMPs in a more efficient way.

The comparison of theoretical and practical perspectives on EM indicates that Porter's win-win concept could be reflected in practice in the hotel context if managers controlled and measured it properly. Although this investigation of EMPs offers more evidence to hotel researchers and practitioners, the general theory on EM is apparently relevant to the specific context of hotels overall and consequently has much potential in applied terms to hotel Organisations seeking to enhance their environmental performance. Having discussed the research findings and presented the contributions, this research identifies a number of limitations affecting the whole study in the following section.

8.3 Research limitations

This section intends to acknowledge some of the potential weaknesses by discussing fundamental criticisms of the qualitative approach and case study sample size. From a positivist point of view, this study is potentially unscientific and very subjective due to the difficulties of arriving at a sense of "truth" by simply talking to managers and examining numerical data in one hotel group. In addition, there is also the inherent complexity in making sense of the mass of data which is gathered within qualitative research. In many respects these fundamental issues can be seen to underpin more specific issues which arise in considering the limitations of this study with regard to the sampling and data analysis.

The first limitation is related to the reasons for adopting the purposive sampling strategy and choosing this particular hotel group. Despite the limited choice and access to the other hotel Organisations, eight hotel properties were selected in order to be congruent with the stated objectives of this thesis. Nonetheless, it should be recognized that the selection of an appropriate hotel Organisation which had undertaken activities to implement EM programmes was not an easy decision. Bearing that in mind, it was decided to make a matched sample, which involved the identification of hotel properties that had undertaken similar activities to implement EM programmes in the UK only.

The findings about how hotel Organisations manage and control EMPs may be less representative as they are based on only one hotel Organisation and eight hotel properties. Similarly, the findings from this research are only based on the hotel industry, which might not be comparable to other industries. This is the flip side of qualitative research's attention to thick description, and it is difficult to establish how far the findings from only one hotel Organisation with a sample of eight hotel properties can be generalised to other similar EMPs. Although a sufficient amount of detail is provided about the better managed and controlled EMPs, generalizability to Organisations in general might be risky. Hence, the small sample size is acknowledged as a significant limitation of this study and it is recognised that more cases would allow for a more multi-dimensional view of managing and controlling EMPs.

Moreover, there are limitations and challenges associated with the use of semi-structured interviews. For example, Marshall and Rossman (1995) indicated that interviews involve personal interaction, so cooperation is necessary from the interviewees who may be unwilling or uncomfortable in participating, or simply may not be aware of recurring patterns or events in their lives. Therefore, this study must exercise caution in that what participants say they do might not necessarily be congruent with their actual actions. The reason for addressing the issue of generalizability is that this research did not attempt to provide a strict "checklist" to be followed by managers in hotels and other Organisations in general; it only highlighted the key points emanating from the research, for Organisations to consider in order to help them control EMPs and improve environmental performance.

The second limitation is that interpretation might be bound up with the self of the researcher, as qualitative research recognizes that the researcher's own identity, background, and beliefs have a role in the collection of data and the analysis of data; therefore the findings should be approached more cautiously and tentatively. Also, there is a possibility that meanings have been decontextualized. In the process of coding and categorizing the field notes, texts and transcripts, there is a possibility that words have been taken literally out of context. The context is an integral part of qualitative data, and refers to

both events surrounding the production of the data, and events and words that preceded and followed the actual extracted pieces of data that were used to form the units for analysis. There was a very real danger of decontextualization in the coding and categorizing of the interview data by the researcher, which has a bearing on the meaning of the unit as it was originally conceived at the time of data collection.

Furthermore, there was the danger of oversimplifying the explanation. In the quest to identify themes in the data and to develop generalizations, this research faced pressure to underplay and possibly disregard data that did not fit and match the research scope. Inconsistencies, ambiguities, and alternative explanations can be frustrating in the way they inhibit a nice clear generalization – but they are an inherent feature of social life. Social phenomena are complex, and the analysis of qualitative data needs to acknowledge this and avoid attempts to oversimplify matters.

8.4 Areas for further research

The influence of external stakeholders has not been deeply investigated in this study, but the findings suggest the influence of external stakeholders could be a critical factor in achieving successful EMPs. For example, the key attributes from the hotel customers' perspective need to be identified and described and locals' attitudes towards those key attributes also need to be studied because the local community may value the same attribute differently. Moreover, environmental regulations developed rapidly in the twentieth century and the cost of compliance is likely to rise rapidly as the number of statutory offences increases. Environmental legislation gives regulators the power to rectify damage caused by business activities. Some Organisations see environmentalism as an opportunity to pursue a managerial agenda. If this is the case, then EM may degenerate into a marketing tool. Therefore, it is recommended that further research looks at the linkage between stakeholders and financial performance.

This study identified potential ways to reduce water consumption and cost, which is part of hotel EM; and the examination of profit and loss statements in the hotel properties suggests that there are potential problems inherent in using overhead accounts because they wrongly include utility costs in this particular category. Therefore, the findings of this study suggest that there is a need to have a separate account for utilities which records the costs that have been incurred in producing the waste stream. According to this finding, this study recommends that further research could look into Organisational accounting to see how utilities (part of the input costs) are associated with operational processes in the accounting system. Also, environmental management accounting (EMA), which is now new to Organisations, could be a useful tool to help them trace environmental costs. More specifically, Deegan (2003) has pointed out that the objective of activity based costing (ABC) could direct management attention to the activities incurring those overheads rather than to fully recovering the overheads. Hence, it is recommended that ABC could be used as a tool to identify the major activities being performed by Organisations and to assess the resources actually consumed by each activity.

Furthermore, the dynamics of the Organisational environment have changed and the principles of EM are accepted globally. In the past, Organisations were managed in a fairly stable environment, but in the present and future, Organisational structures are and will be changing rapidly and frequently. Hence, a tremendous extension of Organisational scope should be observed through processes and systems encompassing the whole Organisation and even beyond. The need for integrating environmental issues into aspects of management systems will increase and there will also be integration and further development of management systems into new areas such as R&D, marketing, planning and control cycle. Further in-depth studies covering more Organisations are necessary to be able to draw Organisation-level conclusions and to validate the methodologies used here to analyze EMPs.

8.5 Practical recommendations for the case study hotel group

This study identifies relevant activities in relation to EMPs for the case study hotel Organisation to continuously improve environmental performance.

8.5.1 Available standard baseline data

This study concludes that standard baseline data could assist hotel managers to identify a precise upper limit for improving environmental performance. A specific range of activities in evaluating EMPs are identified and it is important to break EMPs down into discrete elements for more frequent evaluations. For example, this study assesses how changing circumstances such as new facilities, changes in activities, new scientific data, new stakeholders' concerns, amongst other things, might influence the effectiveness and adequacy of current EM, and whether or not this needs to be changed to meet the Organisation's ever evolving goals and needs. The results of such evaluations then need to be documented and discussed with top management in order to ensure that corrective action plans are developed and implemented in a timely manner. Therefore, it is vital that the environmental performance of developing and ongoing operations should be regularly evaluated against baseline information because a standardized baseline of information for future comparison is critical in improving environmental performance and in helping hotel managers to achieve overall Organisational objectives.

8.5.2 Participation of key managers

Most hotel managers and financial controllers express a view that environmental reporting and the achievement of environmental targets are generally not their control criteria. However, where activities are complex, they should follow the form of documented procedures if potential environmental impacts are significant. These documented procedures would help an Organisation ensure regulatory compliance and consistent environmental performance. This study reveals that lack of knowledge is a fundamental

problem for improving any Organisational practice. In this respect, the adoption of benchmarking for environmental performance is necessary to the active encouragement of empowered creativity in key employees across all levels and of knowledge-sharing among stakeholders. Also, whilst the hotel accounting team obviously have a role in assisting management to appreciate the balance of costs and benefits associated with EM, it appears likely that such practices also demand a proactive and involved accounting team, working hand-in-hand with management to enable hotel Organisations to cope more effectively with the challenges so as to achieve better financial performance.

8.5.3 Building environmental culture

It takes time to build an environmental culture in any Organisation because changing the outlook of a whole Organisation cannot happen all at once; this change is difficult and will take a decade or more to achieve. Cultural change can be accomplished by learning processes, such as knowledge transmission and transformation of know how. In addition, the necessary feedback, which favours learning, must operate at a fast pace. The shift will not happen all at once but by continuous adaptation and correction at all levels of the decision-making process. It is a long process and a time consuming one to educate employees to develop an environmental culture within an Organisation. Therefore, it is believed that every Organisation needs an appreciation of the implications of environmental issues for corporate activities in order to establish an environmental culture. There are examples of Organisations adopting both strategies. For example, the Body Shop heavily promotes the fact that it is environmentally responsible, and this behaviour is a competitive advantage which was established specifically to offer consumers environmentally responsible alternatives to conventional cosmetic products.

8.5.4 Installation of water meters

The findings reveal that most participating hotel properties only have one water

meter which may result in missed opportunities for managers to quickly identify breaks in pipes and repair them. As Stipanuk (2002) indicated, the sub meter is relatively inexpensive during new construction; thus, the case study hotel Organisation should consider installing sub meters when building new hotels. McElligott (2000) has also recommended that meters be read on at least a weekly basis, noting any sudden changes in consumption, which may indicate a leak. An indication of underground leaks can be found in changes in ground surface appearance, such as unexplained damp patches or subsidence, which need to be looked out for. If left undetected, leakage can result in vast amounts of water and money being wasted, with each hotel being responsible for repairing underground leaks that occur on its property.

8.5.5 Developing communication system for EMPs

It is recommended that the case study hotel Organisation needs to establish a system for communicating environmental issues and information internally to all employees, on-site service providers, and contractors, and externally to customers, and other interested parties. The bottom-up approach could be an effective internal communication means that requires mechanisms for exchanging information throughout the whole hotel Organisation. Since employees are on the front lines, they are often an excellent source of information and ideas on how to improve the Organisation's environmental performance, such as through identifying resource saving opportunities. Similarly, for an external communications strategy, it is recommended that the case study hotel Organisation communicates with external stakeholders about how proactive they want to be. The information should include, at least, the release of EMS and environmental performance information for interacting with regulatory agencies regarding environmental issues, regulatory compliance, and required reporting.

In addition, there were limited documents indicating that the case study hotel Organisation produces annual environmental or sustainability reports that involve EM programmes and results. According to the literature, an

environmental report can be used as a tool to communicate with hotel stakeholders, and some leading Organisations (e.g. Accor and Razidor) found that a more proactive external communications strategy can be beneficial, even though it may require more resources. For example, reporting on environmental performance may give an edge over the competition. It may also improve the relationship with the surrounding community. In addition, external stakeholders bring useful perspectives and help with identifying environmental issues, often identifying issues that might otherwise have been overlooked; therefore it is recommended that the case study hotel Organisation must produce environmental reports regularly.

8.6 Learning outcomes

This section reflects the areas in which the researcher has learned and obtained knowledge and experience through this research. I think of the complexity of what research students are asked to do and the various skills that are required in order to write a good thesis. I have learned five abilities through conducting the research and writing this thesis. First, the ability to marshal evidence for research purpose and this is the highest-order concern: keeping me from turning in a data dump: one needs to know how to be in control of the source information and use it to build one's own argument. Second, the ability to find sources (in library databases, on the internet, from companies, etc.) and evaluate their credibility. Also, the critical reading ability involved in finding a variety of sources that express a range of viewpoints on environmental related accounting issues, so that I can have a balanced bibliography of sources. Third, the ability to translate or convert authors' information into my argument to formulate the research questions and aim which can then guide the whole research process. Fourth, the ability to integrate quoted material smoothly into my prose, which includes the use of attributive tags ("Porter argues that..." or "according to Porter..."). Finally, the ability to master a massive amount of primary data into meaningful analysis and answer research questions and achieve the research aim.

This research helped me to get to the point of what to investigate even though the studied subject is new and rich data confused the direction. The knowledge of research methods, or methodology, is central to this research and writing this thesis has been a great learning experience and has enabled me to improve my academic writing skill as a researcher. Of course, my supervisors played an important role in improving my academic writing skill and perhaps this is one of the most important things I have learned from this research. Moreover, communication difficulties at best can generate misunderstanding, misinterpretation and consequent failure to transfer a message, not withstanding the impact of lost opportunity at worst failing in the communication process can result in inter-personnel problems. Therefore, I have learned the power of seeking in the more active tenses, to recognize potentially difficult situations and to identify why my communications go wrong.

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Appendix 1: Water benchmarks

1: Benchmarks for water consumption (Litres/guest)

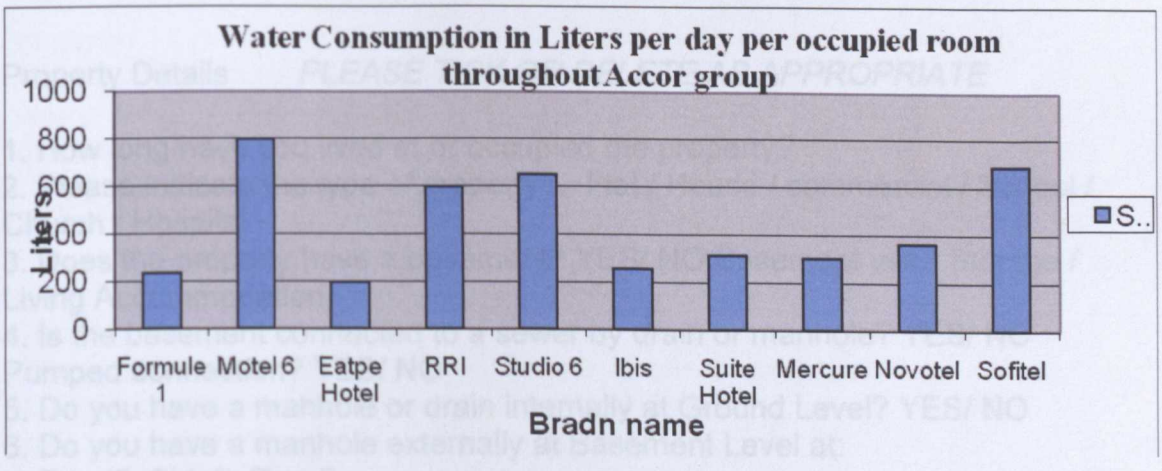
Type of hotel	Good	Fair	Poor	Very poor
Large hotel with laundry, kitchens, air con, and pool	< 600	600 - 700	770 – 880	> 880
Medium sized 50-150 room hotel	< 440	440 - 500	500 – 600	> 600

Source: Green Hotelier, (1995)

2: Water use benchmark for hotel from Thames Water (water usage m^3 per bed space per year)

	Low	Average	High	Very High
B & B	< 30	30 – 40	40 – 70	> 70
2* & 3*	<40	40 – 60	60 – 105	> 105
4* & 5*	<80	80 – 100	100 – 225	> 225

3. Water performance indicators in the Accor group



Formule 1: 234 litres; Motel 6: 801 litres; Eatpe Hotel: 196 litres; RRI: 598 litres; Studio 6: 655 litres; Ibis: 256 litres; Suite Hotel: 317 litres; Mercure: 306 litres: Novotel: 365 litres; Sofitel: 689 litres.

Appendix 2: Sewer Flooding Questionnaire

Thank you for taking the time to complete this questionnaire, the information will help Thames Water to investigate the cause of the flooding. Should you wish to make comments or require an acknowledgement please feel free to return a letter with this questionnaire in the post paid envelope enclosed, as soon as possible and no longer than 21 days after the date of issue please.

Thames Water Customer Services Date issued:
_____
PO Box 508
Swindon SN38 9TU Continuum/Investigation ref. _____493809_____
Occupier Details
Forenames_____ Surname
_____
Address_____
_____
_____
_____
_____ Post Code
_____
Home Tel _____ Mobile
_____
Which Water Company bills you? _____ Account No._____

Property Details *PLEASE TICK OR DELETE AS APPROPRIATE*

1. How long have you lived at or occupied the property?
2. Please indicate the type of property? Flat / House / commercial / School / Church / Hospital
3. Does the property have a basement? YES/ NO Basement use? Storage / Living Accommodation
4. Is the basement connected to a sewer by drain or manhole? YES/ NO Pumped connection? YES/ NO
5. Do you have a manhole or drain internally at Ground Level? YES/ NO
6. Do you have a manhole externally at Basement Level at:
- Front? Side? Rear?
7. Do you have a manhole externally at Ground Level at:
- Front? Side? Rear?

8. Have you witnessed or been affected by flooding caused by sewage or surface water from a sewer at: -

Your property (including garden) / in the street / elsewhere / (please state)
_____

If 'NO' please sign and date the form and return as soon as possible

Signed Date

If 'YES' please complete the remainder of the form *PLEASE TICK OR DELETE AS APPROPRIATE*

9. Has work been done at the property to help prevent flooding? YES / NO
9a.If YES please specify type of flood prevention if known: -

10.Which areas were affected by the flooding? *Please tick all that apply*
Inhabited basement / cellar Internal ground floor
Uninhabited basement / cellar Rear garden

Attached garage or outbuilding Front garden / driveway
Detached garage or outbuilding Shared garden / driveway

Road / public highway Field / park

Other please specify
11. Have you reported to or contacted any other organisations / agencies? Please specify
12. Do you know where the flooding came from? *Please tick all that apply*
Manhole in road Road gully by Kerb Run off from road
Internal manhole on own property at:- Basement Level? at Ground Level?
External manhole on own property at:- Basement Level? at Ground Level
Waste gully at own property Rain gully at own property
Rain water not draining from garden Run off from own field / park
Manhole at neighbouring property Waste gully at neighbouring property
Rain gully at neighbouring property
Ditch, river, stream, watercourse, groundwater or other source. Please specify

13. If the flooding was internal, please indicate where it came from. *Please tick all that apply*
Toilets, showers etc in basement Toilets, showers on ground floor
Manhole covers, drains in basement Floor
Through walls in basement Under door
Through floor in basement Through air brick
Other please specify

14. Please indicate when and where flooding occurred and tick as appropriate. List all dates you can remember, if you can only recall the month and year leave the day blank. Thank you

Flood Incident Date			Flood Location			Flood Water Type		Flood Cause			Heavy rain at time of flooding		Internal flood more than 50% floor area		Did you vacate property due to flooding		External flood more than 50% of garden		Access to property restricted		Did you vacate property due to flooding	
dd	mm	yy	Inside Building	Outside Building	Highway / Road	Foul Water	Surface Water	Blockage	Collapse	Private	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No

Appendix 3: Key features of positivist and phenomenological paradigms

Key area	Positivist paradigm	Phenomenological paradigm
Basic beliefs	- The world is external and objective - Observer is independent - Science is value-free	- The world is socially constructed and subjected - Observer is part of what observed - Science is driven by human interests
Researcher should	- Focus on facts - Look for causality and fundamental laws - Reduce phenomena to simplest elements - Formulate hypotheses and the test them	- Focus on meanings - Try to understand what is happening - Look at the totality of each situation - Develop ideas through induction from data
Research design	- Structured, formal and specific detailed - - plans - Large samples - Verifying theories - Experimental design	- Evolving and flexible - Small sample - Generating theories - Fieldwork methods - Falsification
Preferred methods	- Operationalising concepts so that they can be measured	- Using multiple methods to establish different views of phenomena
Validity	- Does an instrument measure what it is supposed to measure?	- Has the researcher gained full access to the knowledge and meanings of informants?
Reliability	- Will the measured yield the same results on different occasions (assuming no real change in what is to be measured)?	- Will different researchers make similar observations on different occasions?
Generalisability	- What is the probability that patterns observed in a sample will also be present in the wilder population from which the sample is draw?	- How likely is it that ideas and theories generated in one setting will also apply in other settings?
	- Provides wide coverage of the range of situations - Greater opportunity for researcher to retain	- Ability to look at change processes over time - To understand people's meanings

Strengths	control of research process - Clarity about what is to be investigated, therefore, data collection can be fast and economical - Helps to generalise previous research findings and test previously developed hypotheses	- To adjust to new issues and ideas as they change - To contribute to the evolution of new theories - Provides a way of gathering data which is natural rather than artificial
Weaknesses	- Methods tend to be rather inflexible and artificial - Not effective in understanding processes or the significance that people attach to actions - Not very helpful in generating theories	- Data collection takes a great deal of time and resources - Difficulty of analysis of data Harder for the researcher to control the research process - Reliability problem with findings

Source: adapted from Gray (2009), Easterby-Smith, Thorpe and Lowe (2004), and Denzin and Lincoln (1994)

Appendix 4: Quantitative and qualitative paradigm assumptions

Assumption	Question	Quantitative	Qualitative
Ontological Assumption	What is the nature of reality?	Reality is objective and singular, apart from the researcher	Reality is subjective and multiple as seen by participants in a study
Epistemological Assumption	What is the relationship of the researcher to that researched?	Researcher is independent from that being researched	Researcher interacts with that being researched
Axiological Assumption	What is the role of values?	Value-free and unbiased	Value-laden and biased
Rhetorical Assumption	What is the language of research?	Formal; Based on set definitions Impersonal voice Use of accepted quantitative words	Informal Evolving decisions Personal voice Accepted qualitative words
Methodological Assumption	What is the process of research?	Deductive process Cause and effect Static design – categories isolated before study Context-free Generalizations leading to prediction, explanation, and understanding Accurate and reliable through validity and reliability	Inductive process Mutual simultaneous shaping of factors Emerging design – categories identified during research process Context-bound Patterns, theories developed for understanding Accurate and reliable through verification

Source: adapted from Flick (2002), and Lincoln and Guba (1988)

Appendix 5: Sources of evidence in case studies: strengths and weaknesses

Source of Evidence	Strengths	Weaknesses
Documentation	-Stable –can be reviewed repeatedly -Unobtrusive – not created as a result of the case study -Exact – contains exact names, references, and details of an event -Broad Coverage – long span of time, many events, and many settings	-Retrievability – can be low biased selectivity, if collection is incomplete -Reporting bias – reflects (unknown) bias of author -Access – may be deliberately blocked
Archival Records	-Same as above for documentation -Precise and quantitative	-Same as above for documentation -Accessibility due to privacy reasons
Interviews	-Targeted – focused directly on case study topic -Insightful- provides perceived causal inferences	-Bias due to poorly constructed questions -Response bias -Inaccuracies due to poor recall -Reflexivity – interviewee gives what interviewer wants to hear
Direct Observations	-Reality- covers events in real time -Contextual – covers context of event	-Time-consuming -Selectivity – unless broad coverage -Reflexivity – event may proceed differently because it is being observed -Cost needed by observers
Participant Observation	-Same as above for direct observations -Insightful into interpersonal behaviour and motives	-Same as above for direct observations -Bias due to investigator's manipulation of events
Physical Artefacts	-Insightful into cultural features -Insightful into technical operations	-Selectivity -Availability

Source: Yin, (2003)

Appendix 6: Research proposal to the selected hotel properties

1. Information needed

- Company documents related to environmental policy and programmes (from headquarter and unit levels)
- Archival records related to any environmental training information or other investments (from headquarter and unit levels)
- Energy and water consumption, any data related waste management over a period of time (e.g. 2 years or 3 years)

2. The date and frequency of visiting

Piloting with one hotel in London will be conducted before starting to collect any data, this task could confirm my data collection process within your hotel group. Two visits are planned to carry out. Basically, the first visit will only collect documents and the second visit will interview hotel managers.

3. Visited hotels and time proposed

I would like to get involving with 9 hotels in UK, however, *I need to confirm with you about the backgrounds and ages of each hotel.* As Rebecca has mentioned during the last meeting that ages of hotel building will affect the evaluation while comparing hotels' environmental practices each other.

Name of hotel	**First visit**	**Second visit**
Hotel X, London, 4 stars, ***Piloting***	***10 AM, 26 Jan.***	***10 AM, 2 Feb.***
1) Hotel 4, London, 4 stars,	10 AM, 09 Feb.	10 AM, 10 May.
2) Hotel 1, London, 4 stars,	03 PM, 09 Feb.	03 PM, 10 May.
3) Inn 1, 3 stars,	10 AM, 10 Feb.	10 AM, 11 May
4) Inn 2, London, 3 stars,	03 PM, 10 Feb.	03 PM, 11 May
5) Inn 4, 3 stars,	03 PM, 11 Feb.	03 PM, 12 May
6) Inn 3, 3 stars,	03 PM, 12 Feb.	03 PM, 13 May
7) Hotel 3, 4 stars,	03 PM, 13 Feb.	03 PM, 14 May
8) Hotel 2, 4 stars,	03 PM, 16 Feb.	03 PM, 17 May
Headquarter Dublin (two managers needed)	03 PM, 19 Feb. 03 PM, 20 Feb.	03 PM, 20 May

Appendix 7: Participant information sheet

1. Study title

The influence of environmental management practices on hotel operating costs

2. Invitation paragraph

You, as a hotel general manager or a financial controller, are being invited to take part in a research study. Before you decided it is important for you to understand rationale behind this research and what it will involve. Please read the following information carefully. Thank you for your time and attention.

3. What is the purpose of the study?

The aim of this project is to examine the relationship between environmental management practices and operating costs in hotel organisations. It will help understand to what extend and how environmental programmes contribute to profits. My project will run about three to four years, and as part of it I will be coming to JuryDoyle hotel group to interview general managers and financial controllers in the UK based hotels.

4. Why have I been chosen?

This project investigates the influences of environmental management practices on hotel operating costs. Therefore, the views from hotel managers and financial controllers are important to this project. Around 10 general managers and 10 financial controllers will be invited to participate in this project.

5. Do I take part?

Your participation in the research is entirely voluntary. It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and will be requested to sign a consent form. In the meantime, you reserve your right to withdraw from this participation at any time without giving any reason.

6. What will happen to me if I take part?

You will be invited to participate in interviews and to supply documentation relating to the cost of energy, water and waste management at your hotel property.

First visit (1-2 hours): Documents collection, e.g. energy bill, water bill and any financial information related to waste management over a period of time; any documents related to environmental issues or environmental programmes.

Second visit (1-2 hours): Interview

To interview managers in order to explain the changes, or no changes, in energy data, water data and waste data from the first visit.

7. What are the possible disadvantages and risks of taking part? (where appropriate)

I am afraid that this project could take up some of your free time, but I would visit only at a time that is convenient to you.

8. What are the possible benefits of taking part?

You can benefit from taking part in this project. Firstly, it may help you to recognize the opportunities to improve business performance; secondly, it could help you to gain intangible benefits such as to improve relationship with stakeholders and the hotel's reputation.

9. Will what I say in this study be kept confidential?

Yes. All information collected from the individual and from the company's documents will be kept strictly confidential. The name of participants and hotel group won't be used and written in my thesis or publications. In addition, all data will be secured in my computer and locked up in my filing cabinets.

10. What will happen to the results of the research study?

You will receive a report that contains of the evaluation of environmental management practices and some suggested recommendations. Your hotel name will be replaced by a pseudonym in my thesis.

11. Who is organizing and funding the research?

I am conducting the research as a doctoral student in the Department of Hospitality, Leisure and Tourism Management, Business School, Oxford Brookes University. This research is a self-funded project.

12. Who has reviewed the study?

This research has been approved by the University Research Committee, Oxford Brookes University.

13. Contact for further information

I can be contacted at the Department of HLTM, Business School, Oxford Brookes University, Headington Campus Gipsy Lane, Oxford, OX3 OBP UK, Tel: 01865 48 38 58. If you have any ethical concerns about the way this project is conducted contact the chair of the University Research Ethics Committee Oxford Brookes University, Gipsy Lane Headington Oxford OX3 OBP or ethics@brookes.ac.uk

Thank you for taking part in this study!

Appendix 8: Interview schedules

Part I: Interview schedule for Head Office

Section I: Background of environmental director

Q.1: How many years have you been working for the company and for this hotel?
Q.2: How many years have you been working as environmental director?
Q.3: What is your educational background?
Q.4: What is your nationality?

Section II: Environmental Management in general

Q.5: Does your company have any environmental management programmes?

- If yes, what are they?
- What reasons motivate company to implement them?

Q.6: Does your company benefit from implementing energy, or water, or waste programmes?

- If yes, what are they?
- If no, what kind of difficulties or problems from implementing energy, or water, or waste programmes?

Q.7: Do you think that environmental management programmes have had a cost for the company?

- If yes, what are they?

Q.8: Does your company have environmental policy?
- If yes, does this deal specifically with issue of water management?
- What reasons drive your company to have environmental policy?
- What are the main objectives of this environmental policy?

Q.9: Are responsibilities for environmental management programes delegated in this company?

- If yes, who is he or who are they?
- How many are they?

Section III: Commitment at the top level

Q.10: Do you integrate environmental issues into company's objectives?

- If yes, what are they?
- If no, can you briefly talk about how do you deal with environmental issues?

Q.11: Are quantitative goals of water efficiency established and tracked?

-If yes, what are they?
- Who established this goal? (from head office or hotel itself)
- How did you track the quantitative goal of water efficiency, e.g. by analyzing monthly consumption and costs against room sold or using other accounting systems?

-Have you experienced any problem or barrier while tracking water efficiency from hotels?

Q.12: How are water efficiency goals and results communicate?

- Between company and hotels' guests

- Between company and its employees
- Between company and shareholders

Q.13: Do you have successful water efficiency achievement from any hotel?

- If yes, what are they?
- Have your company publicise the achievements of water management?
  * Case study articles
  * Award programmes
  * Media coverage
  * Annual environmental report

Q. 14: Is there any program or system which encourage staff to participate for achieving the goal?

- Training (see list)

What programmes	Yes/No	Who attends	How often
Raising awareness about environmental information in general			
Improving skills by providing technical training			
Improving energy efficiency			
Improving water efficiency			
Reducing wastes			

- Reward or incentive system? What are they?

Q.15: Has your company established a budget to invest in improving water efficiency?

- If yes, how much did you invest for the past two years?
- Who manages budgets, hotel general manager or head office?
- If no, what does your company do to improve water efficiency?

Section IV: Water management

Q. 15: Does your company apply any environmental management systems (EMS) to implement environmental management programmes, e.g. ISO 14001?

- If yes, what kind of EMS?
- If no, do you have your own system?

- How does your company implement environmental management programmes if you didn't any EMS or your own system?

Q.16: Does your company produce any internal report which records the details of water efficiency, energy efficiency or waste management?

- If yes, when did you start to have this kind of report? (can you enclose a copy)
- If no, why not?

Q. 17: Does your company apply a separated accounting system for recording water and energy efficiency, or waste management, e.g. environmental accounting or ecological accounting?

- If yes, when did you start to apply?
- If no, how do you track and evaluate water and energy efficiency or waste

management?
Q.18: Do you think that age or conditions of building affect the efficiency of water management?

- If yes, can you briefly describe how it is affected?

Part II: Interview schedule for General Manager

Section I: Background of company's general managers

Q. 1: How many years have you been working for the company?
Q. 2: How many years have you been working as general manager?
Q. 3: What is your educational background?
Q. 4: What is your nationality?
Q. 5: How old is the building?

Section II: Environmental requirement and conditions

Q. 6 Does your hotel have environmental policy regarding water efficiency?
- Q. 6.1: If yes, does water policy establish by head office or hotel itself?
- Q. 6.2: If no, do you know whether head office has water policy or not?

Q. 7: Does your hotel have a water efficiency action plan?
- Q. 7.1: If yes, did water efficiency plan establish by company or hotel?
- Q. 7.1.2: If water efficiency established by hotel, what reasons motivate your hotel to establish the water efficiency plan?

- Q. 7.2 If no, how does your hotel do to improve water efficiency?

Q. 8: Are water efficiency responsibilities delegated in this hotel?
- Q. 8.1 If yes, who is responsible for water efficiency?

Q. 9: Are quantitative goal established and tracked?
- Q. 9.1 If yes, when did you establish the quantitative goal and have you achieved this goal?

Q. 9.2 How did you track the quantitative goal of water efficiency e.g. by analyzing monthly consumptions and costs against room sold or using other accounting system?
Q.9.3: Do problems or barriers while tracking the water efficiency?
Q. 10: How are water efficiency goals and results communicated with head office, hotel guests and hotel employees, e.g. through annual financial report or guest newsletters?

Section : Perceptions, awareness, and commitment of Top management

Q. 11: What incentives exist for employee participation, suggestions, and increased awareness?
Q. 12: Does your hotel set up any budget to invest in water efficiency?
- Q. 12.1: If yes, does hotel receive any budget to invest in water efficiency from head office?
- Q. 12.2: If no, what does hotel do to improve water efficiency?

Q. 13: Does your hotel employees attend any training programmes or receive information regarding water efficiency?
- Q. 13.1: If yes, - who will be attended in the training programmes
  - what kind of training employee will receive?
  E.g. general environmental information or technical training?

- Q. 13.2: If no, what does your hotel do to increase employees

awareness and participation?

Q. 14: What benefits do you think environmental management programmes have had for the hotel?

Q. 14.1 How about water management?

Q. 15: What costs do you think environmental management programmes have had for the hotel?

Q. 15.1 How about water management?

Q. 16: Do you think that existence of water management changes the way hotel usually operates? E.g. employees get more tasks to do or more inspections to check

Section IV: Management of hotel's water efficiency

Q. 17: Does your hotel offer linen reuse option to multiple night guests?

Q. 17.1 If yes, is that effective way to reduce linen used and how much has decreased?

Q. 18: Does any water use in your hotel get recycled or reused?

Q. 18.1: If yes, what type of treatment is given to recycle or reused water, e.g. filtration, chemical/bacterial, or distilled water usage...etc?

Q. 19: Has your hotel taken any steps in the past two years to reduce water use, e.g. policy or process change, equipments change, educated staff..etc.?

Q. 19: If yes, please describe steps taken to reduce water use?

Q. 20: How many meters does your hotel have to monitor water use?

Part III: Interview schedule for financial controller

Section I: Background of financial controller

Q.1: How many years have you been working for the company and for this hotel?
Q.2: How many years have you been working as financial controller?
Q.3: What is your educational background?
Q.4: What is your nationality?

Section II: Commitment and communication

Q.5: What benefits do you think environmental management programmes could have for the hotel?
- Energy management?
- Water management?
- Waste management?

Q.6: Have your hotel had any disadvantage from implementing environmental management programmes?
- Energy management?
- Water management?
- Waste management?

Q.7: Do you produce any report regarding water consumption?
- What kind of contents, can I have a copy of that report?
- Who read this report?
- How often do you produce this report?

Q.8: Have you attended any program to improve water efficiency?
- Training (see table)

What programmes	Yes/No	Who attends	How often
Raising awareness about environmental information in general			
Improving skills by providing technical training			
Improving energy efficiency			
Improving water efficiency			
Reducing wastes			

Q.9: What incentives exist for you to participate, suggest, and increase awareness of environmental management programmes?
- If yes, what are they?

- Do you think whether incentives or reward systems help to improve employees' participation?

Section III: Accounting system

Q.10: Do you record water costs and consumptions monthly?

- Have you separated fresh water and wastewater?
- Have you evaluate water costs and consumptions?
- How often?
- How do you record water costs and consumptions?

- Have you used any techniques to evaluate how efficiency of your hotel water uses?

Q.11: Have you performed a cost analysis on water efficiency opportunities?

- Can you briefly talk about?

Q.12: Do you have a separated accounting system for recording water costs and consumptions, such as environmental accounting?

- If yes, what kind of accounting system
- If no, where do you record the costs and consumption of water?

Section IV: Water management

Q.13: Do you think that water bill contains enough information to help you measuring water consumption and costs?

- If yes, can you give examples of what information are useful?
- If no, what kind of information you think that water bill should include?

Q.14: Have your hotel changed water suppliers for the past two years?

- If yes, when did you change?
- Why did you change?
- If no, are you satisfied with current water supplier?
- Have your hotel negotiated cheaper price with current water supplier?

Q.15: Do you know the actual breakdown of your hotel water uses?

- If yes, can you give actual breakdown of each area?

Areas	Water consumption	Water costs
Cooling and heating		
Process rinsing		
Cleaning activities		
Kitchens		
Laundries		
Water treatment generation		
Others		

- If no, how do you track those water uses?

Q.16: Does your hotel doing simple things to improve water efficiency?

- If yes, what activities are they?
  * Leak inspection
  * Eliminating unnecessary uses
  * Using times
- How often?
- Who does these activities?
- How do you check they are done?

Appendix 9: The history of the hotel group

- Significant events regarding the development of the AB hotel group

Years	Background hotels
1839	Commercial Lodgings
1849	The commercial and Family Hotel
1919	Taken over by the British authorities for office accommodation
1924	Purchased by a group of twelve Dublin businessmen
1973	Catered for the tour group from the USA on Aer Lingus's newly purchased Boeing 707.
Early 1990's	Intensively promoted in the home and European markets
Late 1960's	Due to increased tourist numbers, Board Failte began to offer incentives to build and expand hotels.
1972	Three modern losing-making hotels emerged from Intercontinental Hotel limited ??
Early 1980's	The company began to look at the possibility of becoming a public company
1986	The possibility of overseas expansion was given serious consideration
1990	The Group's first acquisition was made
1993	Introduced Inn brand by opening two Inns in Dublin; One UK hotel was acquired in London
1994	Opened one Inn and acquired one hotel
1995	Acquired one hotel; obtained a full listing on the London Stock Exchange and raised IR 1.5 million
1996	Opened one Inn in Dublin; Decided to bring the "Inn" brand to the UK
1997	Opened two Inns in Dublin
1998	Opened two Inns in the UK
1999	Opened one Inn and acquired one hotel in the UK Acquired another hotel group
2000	Opened one hotel in the UK
2001	Opened one Inn in the UK
2002	Opened one Inn in London;
2003	Opened two Inn in the UK; new built hotels
2004	Opened two Inns in the UK; new built hotels
2005	Opened two Inns in the UK
2006	Three Inns are scheduled to be opened in 2006
2007	Two Inns are scheduled to be opened in 2007

- Significant events regarding the development of CD hotel group

Years	Backgrounds of hotels
1964	Instant success by opening the first hotel serving local businessmen during the week and providing affordable, quality accommodation for guests coming into the city for the weekend
1966	The same concepts applied to the other three hotels
1972	Ireland's largest hotel in Dublin opened due to an increased demand for conferences
1977	Purchased the Botanical Garden from Trinity College and developed it into a five-star hotel
1984	Opened a five star hotel which is becoming one of the leading Hotels in the world Three hotels were acquired in the early 1980's
1997	One plaza in Washington was acquired
1999	Another hotel was opened in Washington DC The acquisition of the CD hotel group by AB hotel group in May

Appendix 10: Cost saving from the measurements with no capital expenditures

	Estimated Annual		Savings		
Description of recommendations	(£)	(kWh)	CO2 tonnes	Estimated costs (£)	Payback period (yrs)
1. Heat generation and distribution	100	10,000	2.0	-	-
- Maximize boiler efficiency					
2. HVAC				-	
- Develop understanding of plant and controls	7,200	228,000	82.0		
- Adjust controls – general				-	
- Reduce bedroom temperature range	650	16,000	7.0		-
3. Lighting				-	
- Lighting disciplines					
- External lighting schedule					
4. Catering	550	22,000	7.0		-
- Catering disciplines					
- M&T					
- Check refrigeration set points				-	
- Switch chillers off at the end of shift	800	27,000	9.0		-
5. Building fabric					-
- Windows and door disciplines	9,100	-	-	-	
6. Water services					
- Address high water consumption	1,150	4,000	2.0		-
- Adjust balancing valves – basins					
7. Miscellaneous					
- Reduce supply capacity					
- Activate power save modes on PCs etc.					
Total	**19,550**	**307,000**	**109.0**		

Appendix 11: Tasks in three main areas to reduce water usage

Areas	Tasks to reduce water usage
Tasks set for the guestroom and some public areas:	- Ensure that the environmental card relating to the use of towels is displayed in all bathrooms and that only towels left on the floor are taken for washing. - Reduce the volume of water flushed from bedroom toilet cisterns by placing Hippo bags in the cistern to retain one litre of water. - Do not leave taps running while cleaning the bathroom. - Do not flush toilets unnecessarily when cleaning or inspecting bathrooms. - Report all dripping or leaking taps and toilets. - Check shower water pressure and volume, 9 litres per minute or less is considered efficient. - Consider putting in flow restrictors or aerators on showerheads that conserve water by reducing volume but not pressure and the potential to reduce water to as low as 6 litres per minute. - Ensure that the automatic urinal flush in public toilets is set at optimum. In addition, consider installation of a sensor that switches off the flush when toilets are not in use. - Reduce volumes of water being flushed from the cisterns of public toilets by use of Hippo Bags. - Install flow restrictors in all taps. - Ensure that taps are the spring loaded type which switches off automatically when let go.
Food and Beverage areas:	- Devise a programme to reduce the consumption of water in the kitchen and service areas. - Avoid washing kitchen equipment and utensils under running water. - Do not leave taps running unnecessarily in wash-up or food preparation areas. - Check water pressure and have any excessive pressure reduced to optimum level. - Use dishwasher on full racks only. - Monitor the dishwasher customer service report to ensure that the equipment is working efficiently. - Report any dripping taps or other leakages in kitchen, wash up, or back of house areas. - Pay particular attention to backyard areas as this is frequently a source of water wastage through external taps or yard washing equipment. - If a yard hose is in use, it should be fitted with a trigger mechanism which automatically cuts out when not in use. - Do not use cold running water for the defrosting of food

Appendix 12: Goals for suppliers and contractors

- Review the environmental policy and performance of your supplier by sending a letter/questionnaire to cover basic question and establish environmental compliance level;

- Include an environmental standard specification for the purchase of products and services, particularly in the areas of food items cleaning products and disposable;

- Purchase non-phosphate cleaning products and oxygen bleaches;

- Purchase drinks in returnable bottles where possible;

- Encourage the use of returnable containers and minimum disposable packaging;

- Look for opportunities to involve the supplier in the reduction or recycling of the packaging which that supplier creates or supplies;

- Take account of the beneficial cost savings from the life cycle of environmentally designed electrical equipment e.g. dishwashers, vacuum cleaners etc. which may not appeared in the purchase price (similar to that of long-life bulbs);

- Avoid furniture made from tropical hardwoods;

- Purchase fresh food prepared where possible to minimise the creation of organic waste in the kitchen.

Appendix 13: Environmental Checklist

Checklist for waste management for key managers

- Waste management committee: devise a promotion to highlight the waste reduction campaign at the hotel to include all departments (include printer to provide printed material on a sponsorship arrangement).
- Food & Beverage manager/ head chief/head steward waste contractor: to implement a system to facilitate the separation of organic waste in the kitchen and store this waste in appropriate containers for a separate collection.
- Accommodation manager: to arrange that all non returnable from bedroom are directed for disposal to the rehab bottle bank and away from the compactor.
- Waste management committee, K.P.W. group printer, and purchasing: to arrange the retention and return of used inkjet/laser cartridges for the purchase of recycled cartridges.
- Executive chef, and Restaurant manager: audit the volume of food returns from customers plates and the contribution to overall food waste. Consider implications and solutions to toast and breakfast wastage and over-portioning.
- Maintenance Dept. supplier of lamps and purchase office: to arrange the separate of fluorescent tubes and long life bulbs for recycling. The collection of same and the identification of hazardous materials for environmentally safe disposal.
- Waste management committee and purchasing Dept.: identify and list the main sources of packaging waste, examine and recommend alternative system to reduce the volumes in consultation with relevant suppliers and purchasing Dept.
- Waste management committee and marketing Dept.: devise an information promotion to advise customers of the environmental project and include customer participation.
- Accountant: look at the opportunities that exist in the hotel to use recycled paper and recommend to the waste management committee.
- Kitchen: consider the replacement of paper disposable hats with washable one and record the reduction of disposable hats per year. Ensure that fryers are being cleaned daily and the oil filtered to extend its life (a test kit can be acquired to determine when the oil needs changing than going by appearance).

Checklist for water management

Tasks set for the guestroom and some public areas:

- Ensure that the environmental card relating to the use f towels is displayed in all bathrooms and that only towels left on the floor are taken for washing.
- Reduce the volume of water flushed from bedroom toilet cistern by placing Hippo bag in the cistern to retain one litre of water.
- Do not leave taps running while cleaning the bathroom.
- Do not flush toilets unnecessarily when cleaning or inspecting bathrooms.
- Report all dripping or leaking taps and toilets.
- Check shower water pressure and volume, 9 litres per minute or less is considered efficient.
- Consider flow restrictors or aerators on showerheads that conserve water by reducing volumes but not pressure and the potential to reduce water by up to as low as 6 litres per minute.
- Ensure that the automatic urinal flush in public toilets is set at optimum also consider installation of sensor that switches off the flush when toilets are not in use.
- Reduce volumes of water being flushed from the cisterns of public toilets, buy use of Hippo Bags.

Tasks set for the Food and Beverage areas:

- Devise a programme to reduce the consumption of water in the kitchen and service areas.
- Avoid washing kitchen equipment and utensils under running water.
- Do not leave taps running unnecessarily in wash-up or food preparation areas.
- Check water pressure and have any excessive pressure reduced to optimum level.
- Use dishwasher on full racks only.
- Monitor the dishwasher customer service report to ensure that the equipment is working efficiently.
- Report any dripping taps or other leakages in kitchen, wash up or back of house areas.
- Pay particular attention to backyard areas as this is frequently a source of water wastage through external taps or yard washing equipment.
- If a yard hose is in use it should be fitted with a trigger mechanism which automatically cuts out when not in use.

Checklist for energy management

- Switch of light when not in use.
- Review the opportunities to install energy efficient bulbs particularly in areas lighting i.e. corridors.
- During low occupancy, rooms should be let in close proximately to each other to minimise energy loss of unoccupied areas.
- Temperature can be adjusted between 23 and 18 degrees, it is efficient to move setting as close to the lower end of the range as is comfortable for the guests.
- Ensure light covers and windows are kept clean (unclean light covers can reduce light output by 50%)
- Check all doors and windows for draught proofing and correct where necessary. Doors and windows should not be open unnecessarily while heating on.
- Define cleaning procedures in guest rooms that will minimise the usage of hot water.
- Ensure that temperature of hot water in the guest bathroom is not unnecessarily hot (approx. 60 degrees should be optimum).
- Included checking of dripping taps in bathroom cleaning procedures and correct where it occurs.

Tasks set for the Food and Beverage areas:

- Correct pre scraping of dishes is more energy saving than pre rising.
- Replacement of dishwashers should consider the facility of heat recovery so that heat from the waste water is used to preheat the incoming water.
- Correct stacking of dishes increase the efficiency of operation.
- Damaged seals on fridge doors contribute to a leaking of energy efficiency.
- The use of induction heating is very beneficial. A cooker that is heated by induction can be left on all day but will only produced heat when a ferrous metal is placed on it. The direct energy heat saving is estimated at 50% over conventional cooking.
- Consider investing in a decarbonising bath for soaking of heavily stained cooking containers. There can be a consider saving on labour, water, energy, and product.

Checklist for effluent and emission management

- Ensure that wastewater from the kitchen is treated before being released into the sewer, fats and grease should be removed wastewater before it reaches the sewage plant and this is done by means of grease traps;

- Ensure that grease traps are in place, working effectively, and a cleaning programme is in place to ensure the continued efficient working of the traps;

- Consider using biological dosing systems which breakdown the oil and fats and consequently reduce the frequency that the traps require to be emptied;

- Review the contents of cleaning materials being used in the hotel and replace any that level of controlled chemicals is within the permitted range;

- Conduct an analysis of the wastewater being discharged from laundry areas to ensure that the level of controlled chemicals is within the permitted range;

- Check the makeup of chemicals being in the laundry area to use to ensure that are not environmentally harmful.

Appendix 14: Summary of water bills n H1

Part I: Estimated monthly water consumptions and costs (from water bills and F.C.)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Usage (m	1528	1554	1860	1847	1956	1893	1956	1913	1821	1882	1601.4	1504	21315
Costs (£)	1826	1857	2204	2180	2300	2226	2300	2261	2160	2232	1928	1832	25305
Costs/use	1 19	1 19	1 19	1 18	1 18	1.18	1.18	1.18	1.19	1.19	1.20	1.22	1.19
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m	1504	1456	1693	2271	2064	1746	1804	1799	1737	1795	1733	1795	21397
Costs (£)	1832	1757	2031	2544	2390	2097	2167	2162	2088	2158	2114	2068	25407
Costs/use	1 22	1 21	1 20	1 12	1 16	1.20	1.20	1.20	1.20	1.20	1.22	1.15	1.19
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m	1425	1353	1725	1758	1854	1652	1755	1725	1685	1698	1633	1657	19920
Costs (£)	1596	1529	1932	1951	2076	1850	1966	1915	1887	1902	1829	1872	22310
Costs/use	1 12	1 13	1 12	1 11	1 12	1.12	1.12	1.11	1.12	1.12	1.12	1.13	1.12

Part II: Water performance indicators (consumption and cost per sleeper night and occupied room)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
No of slee	6168	7706	8788	7323	9356	9075	9855	10727	8859	9929	8662	7372	103820
Usage/sle	0 25	0 20	0 21	0 25	0.21	0.21	0.20	0.18	0.21	0.19	0.18	0.20	0.21
Costs/slee	0 30	0 24	0 25	0 30	0 25	0.25	0.23	0.21	0.24	0.22	0.22	0.25	0.24
Occupied	4678	4976	5913	5857	5987	5956	6011	6213	5923	6134	5998	5214	68860
Usage/occ	0 32	0 29	0 29	0 39	0 34	0.29	0.30	0.29	0.29	0.29	0.29	0.34	0.31
Costs/occ	0 39	0 35	0 34	0 43	0 40	0.35	0.36	0.35	0.35	0.35	0.35	0.40	0.37
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	5478	6847	8245	7098	8092	8048	9723	10580	8205	8677	8002	6979	95974
Usage/sle	0 27	0 21	0 21	0 32	0.26	0.22	0.19	0.17	0.21	0.21	0.22	0.26	0.22
Costs/slee	0 33	0 26	0 25	0 36	0 30	0.26	0.22	0.20	0.25	0.25	0.26	0.30	0.26
Occupied	4543	4918	5686	4790	5407	5694	6012	6066	6011	6004	5749	4648	65528
Usage/occ	0 33	0 30	0 30	0 47	0 38	0 31	0.30	0.30	0.29	0.30	0.30	0.39	0.33
Costs/occ	0 40	0 36	0 36	0 53	0 44	0.37	0.36	0.36	0.35	0.36	0.37	0.44	0.39
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	5231	6184	8035	7254	8136	8254	9524	9857	8654	8544	8452	7251	95376
Usage/sle	0 27	0 22	0 21	0 24	0.23	0.20	0.18	0.18	0.19	0.20	0.19	0.23	0.21
Costs/slee	0 31	0 25	0 24	0 27	0 26	0.22	0.21	0.19	0.22	0.22	0.22	0.26	0.23
Occupied	4125	4857	5874	5241	5471	5524	6241	6341	6241	6258	5421	4875	66469
Usage/occ	0 35	0 28	0 29	0 34	0 34	0.30	0.28	0.27	0.27	0.27	0.30	0.34	0.30
Costs/occ	0 39	0 31	0 33	0 37	0 38	0.33	0.31	0.30	0.30	0.30	0.34	0.38	0.34

Appendix 15: Summary of water bills in H2

Part I: Estimated monthly water consumption and costs (from water bills and F.C.)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Usage (m³	0	1064	1178	1140	1178	1161	1395	1371	1320	1364	1215	1271	13657
Costs (Q	0	1198	1327	1284	1327	1322	1717	1571	1479	1528	1361	1355	15470
Costs/usag	0	1 13	1 13	1 13	1 13	1 14	1.23	1.15	1.12	1.12	1.12	1.07	1.13
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	1209	1126	1271	1230	951 5	1410	1457	1483	1440	1488	1220	1178	15464
Costs (Q	1355	1254	1411	1365	1988	1572	1624	1648	1599	1652	1383	1349	18200
costs/usag	1 12	1 11	1 11	1 11	2 09	1.11	1.11	1.11	1.11	1.11	1.13	1.14	1.18
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	1105	1029	1258	1164	1025	1125	1259	1257	1258	1426	1025	1145	14076
Cost (Q	1132	1021	1241	1198	1025	1136	1245	1236	1376	1421	1097	1081	14209
Cost/usag	1 02	0 99	0 99	1 03	1 00	1.01	0.99	0.98	1.09	1.00	1.07	0.94	1.01

Part II: Water performance indicators (consumption and cost per sleeper night and occiped room)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
No of slee	0	1014	4121	4654	7196	6078	8261	7149	7348	7272	6699	5363	65155
Usage/sle	0	1 05	0 29	0 24	0.16	0.19	0.17	0.19	0.18	0.19	0.18	0.24	0.21
Costs/slee	0	1 18	0 32	0 28	0.18	0.22	0.21	0.22	0.20	0.21	0.20	0.25	0.24
Occuped	0	914	3407	3736	5234	4600	6035	5738	5793	5763	5426	4768	51414
Usage/occ	0	1 16	0 35	0 31	0 23	0 25	0.23	0.24	0.23	0.24	0.22	0.27	0.27
Costs/occ	0	1 31	0 39	0 34	0 25	0.29	0.28	0.27	0.26	0.27	0.25	0.28	0.30
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	5656	5621	6093	5577	6752	6566	9355	7953	8228	7089	6495	4774	80159
Usage/sle	0 21	0 20	0 21	0 22	0 24	0.21	0.21	0.19	0.18	0.21	0.19	0.25	0.22
Costs/slee	0 24	0 22	0 23	0 24	0.21	0 24	0.24	0.21	0.19	0.23	0.21	0.28	0.23
Occuped	4800	4771	5059	4550	5119	4968	6428	5349	6034	5826	5400	4025	62329
Usage/occ	0 25	0 24	0 25	0 27	0.19	0 28	0.23	0.28	0.24	0.26	0.23	0.29	0.25
Costs/occ	0 28	0 28	0 28	0 30	0 39	0.32	0.25	0.31	0.26	0.28	0.26	0.34	0.29
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	5023	4900	5470	5291	4659	5357	5474	5238	5990	6200	4457	5205	63262
Usage/sle	0 22	0 21	0 23	0 22	0 22	0.21	0.23	0.24	0.21	0.23	0.23	0.22	0.22
Costs/slee	0 23	0 21	0 23	0 23	0 22	0.21	0.23	0.24	0.23	0.23	0.25	0.21	0.22
Occuped	3683	3548	4058	4157	3534	4018	4061	4190	4058	4753	3534	3578	46920
Usage/occ	0 30	0 29	0 31	0 28	0.29	0.28	0.31	0.30	0.31	0.30	0.29	0.32	0.30
Costs/occ	0 31	0 29	0 31	0 29	0 29	0.28	0.31	0.29	0.34	0.30	0.31	0.30	0.30

Appendix 16: Summary of water bills in H3

Part I: Estimated monthly water consumptions and costs (from water bills and F.C.)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Usage (m³	1339	1210	1355	1311	1312	1230	1271	1271	1451	1516	1469	1370	14766
Costs (£	1786	1613	1804	1728	1753	1644	1699	1699	1927	2012	1952	1826	19657
Costs/usag	1.33	1.33	1.33	1.32	1.34	1.34	1.34	1.34	1.33	1.33	1.33	1.33	1.33
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	1333	1242	1407	1362	1406	1344	1389	1389	1271	1286	1362	1407	16235
Costs (£	1826	1670	1964	1920	1987	1959	2024	2024	1854	1878	1983	2049	23157
costs/usag	1.33	1.34	1.41	1.41	1.41	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.43
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	1254	1156	1225	1241	1328	1254	1325	1219	1168	1217	1254	1321	14962
Costs (£	1643	1537	1605	1626	1753	1630	1776	1621	1518	1570	1630	1704	19451
costs/usag	1.31	1.33	1.31	1.31	1.32	1.30	1.34	1.33	1.30	1.29	1.30	1.29	1.30

Part II: Water performance indicators (consumption and costs per sleeper night and occupied room)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
No of slee	6060	7093	7807	8712	7902	7401	8448	6929	8032	9012	9396	6950	87682
Usage/sle	0.22	0.17	0.17	0.15	0.17	0.17	0.15	0.18	0.18	0.17	0.16	0.20	0.17
Costs/slee	0.29	0.23	0.23	0.20	0.22	0.22	0.20	0.25	0.24	0.22	0.21	0.26	0.22
Occupied	4827	5572	5673	6918	6231	5625	6859	4564	6274	6537	6800	4909	65962
Usage/occ	0.27	0.22	0.24	0.19	0.21	0.22	0.19	0.28	0.23	0.23	0.22	0.28	0.22
Costs/occ	0.37	0.29	0.32	0.25	0.28	0.29	0.25	0.37	0.31	0.31	0.29	0.37	0.30
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	7671	7699	8445	8573	8936	7469	9129	7969	8168	9135	9535	7441	92499
Usage/sle	0.18	0.16	0.17	0.16	0.16	0.18	0.15	0.17	0.16	0.14	0.14	0.19	0.18
Costs/slee	0.24	0.22	0.23	0.22	0.22	0.26	0.22	0.25	0.23	0.21	0.21	0.28	0.25
Occupied	5843	5438	6102	6330	6360	5675	6356	4957	6430	6781	6844	5256	66529
Usage/occ	0.23	0.23	0.23	0.22	0.22	0.24	0.22	0.28	0.20	0.19	0.20	0.27	0.24
Costs/occ	0.31	0.31	0.33	0.30	0.31	0.35	0.32	0.41	0.29	0.28	0.29	0.39	0.35
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	6600	5780	6806	6532	6324	6270	6974	6772	6147	6761	6600	6290	78747
Usage/sle	0.19	0.20	0.18	0.19	0.21	0.20	0.19	0.18	0.19	0.18	0.19	0.21	0.19
Costs/slee	0.25	0.27	0.24	0.25	0.28	0.26	0.25	0.24	0.25	0.23	0.25	0.27	0.25
Occupied	5016	4446	5104	4773	5312	5225	5300	4876	4672	5071	4823	5284	59848
Usage/occ	0.25	0.26	0.24	0.26	0.25	0.24	0.25	0.25	0.25	0.24	0.26	0.25	0.25
Costs/occ	0.33	0.35	0.31	0.34	0.33	0.31	0.34	0.33	0.33	0.31	0.34	0.32	0.33

Appendix 17: Summary of water bills in H4

Part I: Estimated monthly water consumption and costs (from water bills and F.C)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Usage (m³	2639	2567.9	2630	2552	2626	2210	2592	2544	2638	2334	2194	2327	29854
Costs (£	3503	3368	3441	3381	3454	2933	3411	3351	3469	3075.2	2911	3079.5	39356.7
Costs/usag	1.33	1.31	1.31	1.32	1.32	1.33	1.32	1.32	1.32	1.32	1.33	1.32	1.32
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	2418	3933	3102	2052	2327	3160	3305	2417	3223	3317	2930	3131	35305
Costs (£	3183	5089	4061.9	2322	3508	4942	5657.3	3840	4972	3585	3178	3379	47717.2
costs/usag	1.32	1.29	1.31	1.13	1.51	1.56	1.71	1.59	1.54	1.08	1.08	1.08	1.35
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	2214	2316	1954	2014	1987	2147	2431	2147	2851	2219	2149	2157	26586
Costs (£	2922.48	3033.96	2520.66	2698.76	2583.1	2812.57	3208.92	2855.51	3734.81	2884.7	2836.68	2782.53	34295.94
costs/usag	1.32	1.31	1.29	1.34	1.30	1.31	1.32	1.33	1.31	1.30	1.32	1.29	1.29

Part II: Water performance indicators (consumption and costs per sleeper night and occulped room)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
No of slee	9868	12923	13641	13340	11021	11085	10677	11692	12576	14875	13688	11209	146595
Usage/sle	0.27	0.20	0.19	0.19	0.24	0.20	0.24	0.22	0.21	0.16	0.16	0.21	0.20
Costs/slee	0.35	0.26	0.25	0.25	0.31	0.26	0.32	0.29	0.28	0.21	0.21	0.27	0.27
Occuped	8342	10651	10267	11307	9204	9123	8406	7633	10524	11900	10950	8967	117274
Usage/occ	0.32	0.24	0.26	0.23	0.29	0.24	0.31	0.33	0.25	0.20	0.20	0.26	0.25
Costs/occ	0.42	0.32	0.34	0.30	0.38	0.32	0.41	0.44	0.33	0.26	0.27	0.34	0.34
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	11403	13643	14808	11161	11221	12639	15754	9993	14685	15407	14595	11358	156667
Usage/sle	0.21	0.29	0.21	0.18	0.21	0.25	0.21	0.24	0.22	0.22	0.20	0.28	0.23
Costs/slee	0.28	0.37	0.27	0.21	0.31	0.39	0.36	0.38	0.34	0.23	0.22	0.30	0.30
Occuped	8966	10557	10951	8649	8546	10053	11336	6940	11538	11747	11114	8573	118970
Usage/occ	0.27	0.37	0.28	0.24	0.27	0.31	0.29	0.35	0.28	0.28	0.26	0.37	0.30
Costs/occ	0.36	0.48	0.37	0.27	0.41	0.49	0.50	0.55	0.43	0.31	0.29	0.39	0.40
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	10063.64	10059.57	9304.762	8391.667	9461.905	9759.091	11050	8945.833	13576.19	11095	10233.33	9378.261	126600
Usage/sle	0.22	0.23	0.21	0.24	0.21	0.22	0.22	0.24	0.21	0.20	0.21	0.23	0.21
Costs/slee	0.29	0.30	0.27	0.32	0.27	0.29	0.29	0.32	0.28	0.26	0.28	0.30	0.27
Occuped	7634.483	7470.966	6737.931	6713.333	7098.429	7157	7842	7403.448	9831.034	7396.667	7163.333	7437.931	91676
Usage/occ	0.29	0.31	0.29	0.30	0.28	0.30	0.31	0.29	0.29	0.30	0.30	0.29	0.29
Costs/occ	0.38	0.41	0.37	0.40	0.36	0.39	0.41	0.39	0.38	0.39	0.40	0.37	0.37

Appendix 18: Summary of water bills in H5

Part I: Estimated monthly water consumption and costs (from water bills and F.C)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Usage (m³	1595	1653	1809	1750	1813	1764	1823	1751	1586	1639	1614	1726	18928
Costs (£	1887.9	1745.8	1977.8	1914	1984.8	1935	1999.5	1923.9	1746	1804.2	1776	1897.2	20704.2
Costs/use	1.18	1.06	1.09	1.09	1.09	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.09
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	1726	1554	1722	1480	1716	1792	1852	1825	1731	1789	1708	1723	20622
Costs (£	1897	1711	1888	1578	1820	1893	1956	1930	1833	1894	1808	1823	22029.9
costs/use	1.10	1.10	1.10	1.07	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.07
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	1247	1264	1351	1258	1456	1345	1457	1425	1617	1368	1425	1368	16581
Costs (£	1297	1327	1405	1333	1529	1412	1544	1496	1682	1436	1496	1423	17382.42
costs/use	1.04	1.05	1.04	1.06	1.05	1.05	1.06	1.05	1.04	1.05	1.05	1.04	1.05

Part II: Water performance indicators (consumption and costs per sleeper night and occupied room)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
No of slee	6253	6324	7776	7265	7997	8284	8271	9232	7385	8021	7749	7522	92079
Usage/sle	0.26	0.26	0.23	0.24	0.23	0.21	0.22	0.19	0.21	0.20	0.21	0.23	0.21
Costs/slee	0.30	0.28	0.25	0.26	0.25	0.23	0.24	0.21	0.24	0.22	0.23	0.25	0.22
Occupied	4074	4014	4597	4357	4717	4605	4625	4733	4657	4921	4778	4394	54472
Usage/occ	0.39	0.41	0.39	0.40	0.38	0.38	0.39	0.37	0.34	0.33	0.34	0.39	0.35
Costs/occ	0.46	0.43	0.43	0.44	0.42	0.42	0.43	0.41	0.37	0.37	0.37	0.43	0.38
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	7043	5900	6351	6460	6237	7266	8651	9494	7081	7660	7283	7407	86833
Usage/sle	0.25	0.26	0.27	0.23	0.28	0.25	0.21	0.19	0.24	0.23	0.23	0.23	0.24
Costs/slee	0.27	0.29	0.30	0.24	0.29	0.26	0.23	0.20	0.26	0.25	0.25	0.25	0.25
Occupied	4440	3716	4034	3936	3948	4426	4881	4846	4626	4624	4422	4151	52050
Usage/occ	0.39	0.42	0.43	0.38	0.43	0.40	0.38	0.38	0.37	0.39	0.39	0.42	0.40
Costs/occ	0.43	0.46	0.47	0.40	0.46	0.43	0.40	0.40	0.40	0.41	0.41	0.44	0.42
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	5422	5745	6141	5242	6330	5380	6938	5938	7700	6514	6477	5948	73775.18
Usage/sle	0.23	0.22	0.22	0.24	0.23	0.25	0.21	0.24	0.21	0.21	0.22	0.23	0.22
Costs/slee	0.24	0.23	0.23	0.25	0.24	0.26	0.22	0.25	0.22	0.22	0.23	0.24	0.24
Occupied	3282	3416	3555	3226	3832	3736	3736	3851	4370	3800	3851	3697	44353
Usage/occ	0.38	0.37	0.38	0.39	0.38	0.36	0.39	0.37	0.37	0.36	0.37	0.37	0.37
Costs/occ	0.40	0.39	0.40	0.41	0.40	0.38	0.41	0.39	0.38	0.38	0.39	0.38	0.39

Appendix 19: Summary of water bills in H6

Part I: Estimated monthly water consumption and costs (from water bills and F.C)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Usage (m³	1915	1967	2232	1951	1863	2110	2212	2275	2060	2174	2181	2189	25149
Costs (£	3400	3500	3300	3000	2753	3365	3406	3503	3172	4838	3358	3371	40966
Costs/usag	1.76	1.78	1.48	1.54	1.48	1.59	1.54	1.54	1.54	2.23	1.54	1.54	1.63
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	2183	2551	1910	2283	2248	2041	2282	2252	2580	1210	3067	2447	26594
Costs (£	3115	3466	3175	4721	3462	3666	3776	3729	4245	4283	5019	4039	46696
costs/usag	1.54	1.54	1.66	2.07	1.54	1.80	1.65	1.66	1.65	3.54	1.64	1.65	1.76
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	1873	1742	1736	1548	1758	1796	1926	1725	2340	1574	1736	1852	21606
Costs (£	3034	2839	2743	2539	2795	2945	3139	2846	3861	2550	2794.96	3000.24	35073.74
costs/usag	1.62	1.63	1.58	1.64	1.59	1.64	1.63	1.65	1.65	1.62	1.61	1.62	1.62

Part II: Water performance indicators (consumption and costs per sleeper night and occuiped room)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
No of slee	4814	5675	6918	6050	6835	7315	6538	7647	6750	6572	6134	6070	77518
Usage/slee	0.40	0.35	0.32	0.32	0.27	0.29	0.34	0.30	0.31	0.33	0.36	0.36	0.32
Costs/slee	0.71	0.62	0.48	0.50	0.40	0.46	0.52	0.46	0.47	0.74	0.55	0.56	0.53
Occupied	3927	4540	4826	4595	4991	5157	4636	4985	5037	5116	4796	4399	57005
Usage/occ	0.49	0.43	0.46	0.42	0.37	0.41	0.48	0.46	0.41	0.42	0.45	0.50	0.44
Costs/occ	0.87	0.77	0.68	0.65	0.55	0.65	0.73	0.70	0.63	0.95	0.70	0.77	0.72
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	4515	5411	6670	6949	7074	7367	7996	8251	6962	6447	5773	6185	80000
Usage/slee	0.48	0.39	0.29	0.33	0.32	0.28	0.29	0.27	0.37	0.33	0.53	0.40	0.33
Costs/slee	0.69	0.60	0.48	0.68	0.49	0.50	0.47	0.45	0.61	0.66	0.66	0.65	0.58
Occupied	3683	4380	5068	4785	4932	5060	5388	5074	5014	4719	4252	4168	56523
Usage/occ	0.59	0.51	0.38	0.48	0.46	0.40	0.42	0.44	0.51	0.26	0.72	0.59	0.47
Costs/occ	0.85	0.79	0.63	0.99	0.70	0.72	0.70	0.73	0.85	0.91	1.18	0.97	0.83
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	6042	5807	5600	5160	5171	5987	6420	5391	7548	4629	5600	5788	68955
Usage/slee	0.31	0.30	0.31	0.30	0.34	0.30	0.30	0.32	0.31	0.34	0.31	0.32	0.31
Costs/slee	0.50	0.49	0.49	0.49	0.54	0.49	0.49	0.53	0.51	0.55	0.50	0.52	0.51
Occupied	4672	3959	3694	3440	3740	4276	4187	4107	5318	3422	3945	4116	48192
Usage/occ	0.46	0.44	0.47	0.45	0.47	0.42	0.46	0.42	0.44	0.46	0.44	0.45	0.45
Costs/occ	0.75	0.73	0.74	0.74	0.75	0.69	0.75	0.69	0.73	0.75	0.71	0.73	0.73

Appendix 20: Summary of water bills in H7

Part I: Estimated monthly water consumption and costs (from water bills and F.C)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Usage (m³	[illegible]	[illegible]	1841	2434	2264	2360	2486	1993	2221	2605	3229	3750	30791
Costs (£	[illegible]	[illegible]	1886	2486	2312	2430	2539	2035	2268	2660	3298	3830	31439.07
Costs/use	[illegible]	[illegible]	[illegible]	1 02	1 02	1 03	1 02	1 02	1 02	1 02	1 02	1 02	1 02
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	9[illegible]	[illegible]	[illegible]	2870	2982	2895	3020	2592	2671	3151	2702	2655	31597
Costs (£	[illegible]	[illegible]	[illegible]	3076	3196	3098	3231	2783	2874	3376	2885	2841	34257.76
costs/usag	[illegible]	[illegible]	[illegible]	1 07	1 07	1 07	1.07	1.07	1.08	1.07	1.07	1.07	1.08
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³	[illegible]	[illegible]	[illegible]	1145	1035	1159	1254	1269	1405	1125	1235	1364	14462
Costs (£	[illegible]	[illegible]	[illegible]	1191	932	1182	1279	1282	1124	1238	1606	1364	14763
costs/usag	[illegible]	[illegible]	[illegible]	1 04	0 90	1 02	1.02	1.01	0.80	1.10	1.30	1.00	1.02

Part II: Water performance indicators (consumption and costs per sleeper night and occupied room)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
No of slee	[illegible]	[illegible]	4603	4463	5284	5363	5548	4464	4893	4683	5292	5305	56917
Usage/slee	[illegible]	[illegible]	[illegible]	0 55	0 43	0 44	0.45	0.45	0.45	0.56	0.61	0.71	0.54
Costs/slee	[illegible]	[illegible]	[illegible]	0 56	0 44	0 45	0.46	0.46	0.46	0.57	0.62	0.72	0.55
Occupied	[illegible]	[illegible]	[illegible]	3250	3652	3543	3589	2562	3451	3453	3784	3363	39083
Usage/occ	[illegible]	[illegible]	[illegible]	0 75	0 62	0 67	0.69	0.78	0.64	0.75	0.85	1.12	0.79
Costs/occ	[illegible]	[illegible]	[illegible]	0 76	0 63	0 69	0.71	0.79	0.66	0.77	0.87	1.14	0.80
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	[illegible]	[illegible]	4684	4715	5583	4599	5862	5107	4976	5013	5200	4545	57628
Usage/slee	[illegible]	[illegible]	[illegible]	0 61	0 53	0 63	0.52	0.51	0.54	0.63	0.52	0.58	0.55
Costs/slee	[illegible]	[illegible]	[illegible]	0 65	0 57	0 67	0.55	0.54	0.58	0.67	0.55	0.63	0.59
Occupied	[illegible]	[illegible]	[illegible]	3219	3725	3416	3784	3046	3631	3644	3671	3091	39794
Usage/occ	[illegible]	[illegible]	[illegible]	0 89	0 80	0 85	0.80	0.85	0.74	0.86	0.74	0.86	0.79
Costs/occ	[illegible]	[illegible]	[illegible]	0 96	0 86	0 91	0.85	0.91	0.79	0.93	0.79	0.92	0.86
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of slee	[illegible]	[illegible]	4128	3578	3569	3863	4479	4376	4683	3516	4411	4703	48591
Usage/slee	[illegible]	[illegible]	[illegible]	0 32	0 29	0 30	0.28	0.29	0.30	0.32	0.28	0.29	0.30
Costs/slee	[illegible]	[illegible]	[illegible]	0 33	0 26	0 31	0.29	0.29	0.24	0.35	0.36	0.29	0.30
Occupied	[illegible]	[illegible]	[illegible]	2726	2524	3050	2916	3095	3345	2885	3012	3410	35651
Usage/occ	[illegible]	[illegible]	[illegible]	0 42	0 41	0 38	0.43	0.41	0.42	0.39	0.41	0.40	0.40
Costs/occ	[illegible]	[illegible]	[illegible]	0 44	0 37	0 39	0.44	0.41	0.34	0.43	0.53	0.40	0.41

Appendix 21: Summary of water bills in H8

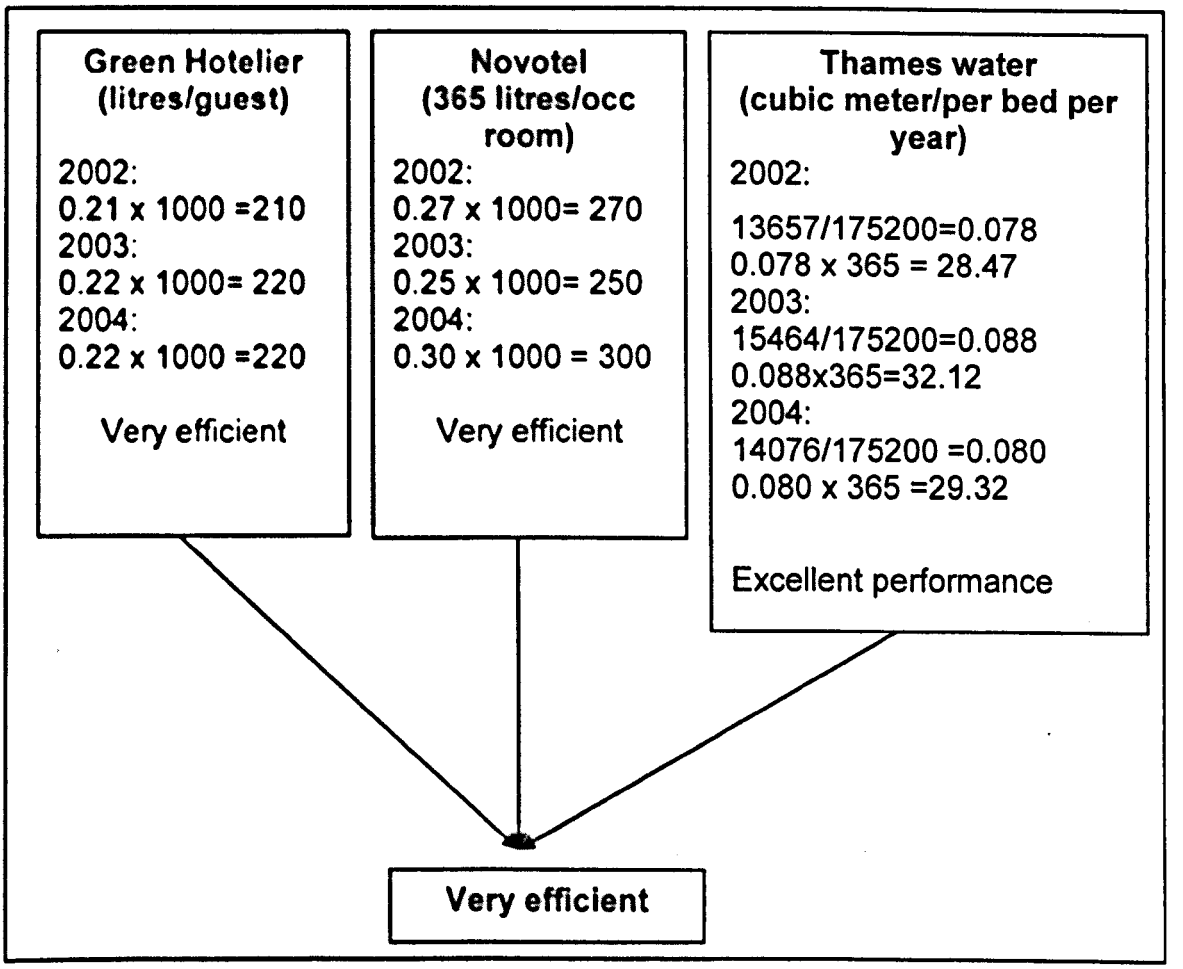
Part I: Estimated monthly water consumption and costs (from water bills and F.C)

2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Usage (m³)	[illegible]	[illegible]	[illegible]	[illegible]	592	501	468	468	1056	1215	1176	895	8720
Costs (£)	[illegible]	[illegible]	[illegible]	993	1026	1000	1039	1039	1513	1668	1614	1278	14070.6
Costs/usage	[illegible]	[illegible]	[illegible]	1.73	1.73	2.00	2.22	2.22	1.43	1.37	1.37	1.43	1.61
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³)	[illegible]	[illegible]	[illegible]	783	809	783	809	892	990	1023	990	1051	10479
Costs (£)	[illegible]	[illegible]	[illegible]	1164	1203	1164	1203	1302	1413	1460	1413	1493	15307.4
costs/usage	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.46	1.43	1.43	1.43	1.42	1.46
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Usage (m³)	[illegible]	[illegible]	[illegible]	985	1211	1024	987	895	1024	1125	954	1124	11924
Costs (£)	[illegible]	[illegible]	[illegible]	1379	1720	1434	1392	1262	1444	1586	1336	1596	16852.59
costs/usage	1.45	1.42	1.41	1.40	1.42	1.40	1.41	1.41	1.41	1.41	1.40	1.42	1.41

Part II: Water performance indicators (consumption and costs per sleeper night and occupied room)

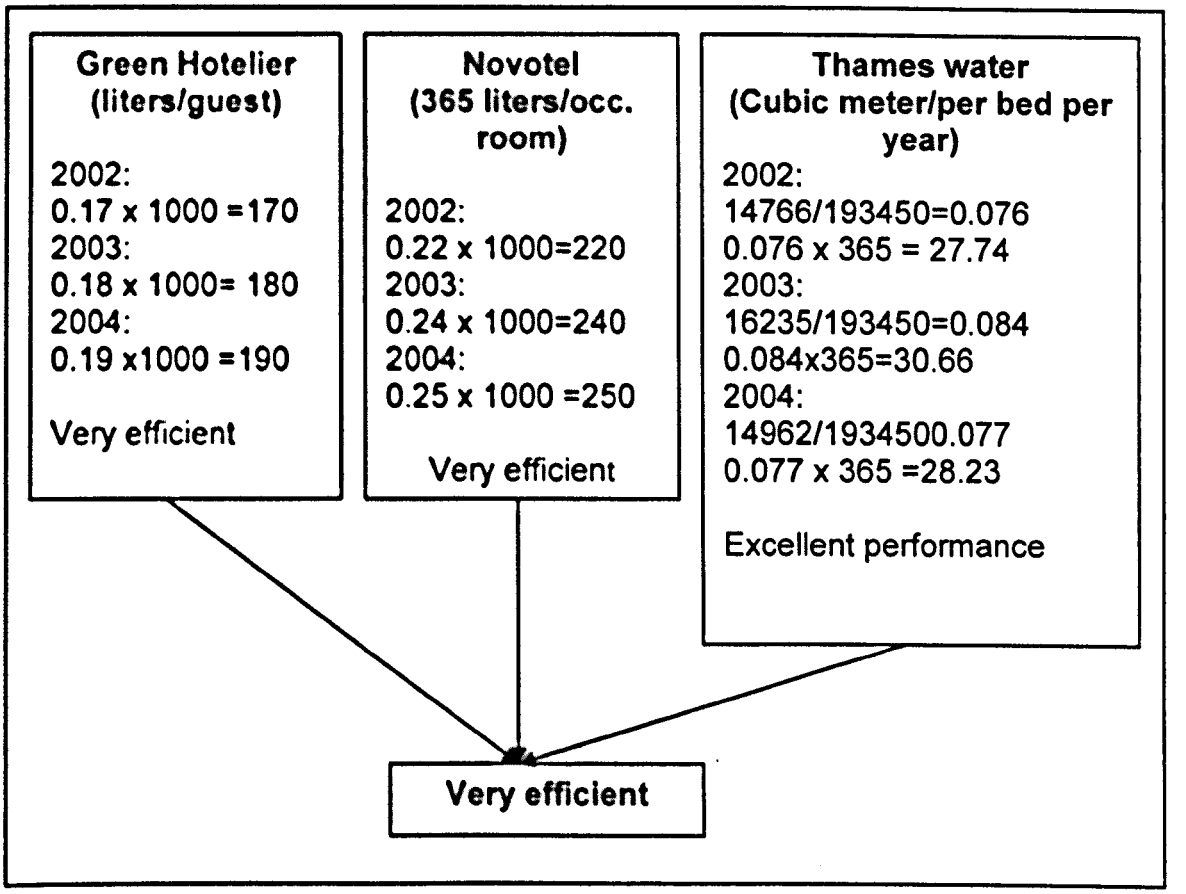
2002	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
No of sleep	[illegible]	[illegible]	[illegible]	5718	5753	6177	6995	8235	6097	6344	7085	5952	75296
Usage/sleep	[illegible]	[illegible]	[illegible]	0.10	0.10	0.08	0.07	0.06	0.17	0.19	0.17	0.15	0.12
Costs/sleep	[illegible]	[illegible]	[illegible]	0.17	0.18	0.16	0.15	0.13	0.25	0.26	0.23	0.21	0.19
Occupied	[illegible]	[illegible]	[illegible]	4192	4258	4208	4516	4796	4386	4606	4641	3958	51313
Usage/occ	[illegible]	[illegible]	[illegible]	0.14	0.14	0.12	0.10	0.10	0.24	0.26	0.25	0.23	0.17
Costs/occ	[illegible]	[illegible]	[illegible]	0.24	0.24	0.24	0.23	0.22	0.34	0.36	0.35	0.32	0.27
2003	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of sleep	[illegible]	[illegible]	[illegible]	5719	5428	5951	6605	7896	5746	7501	6159	6757	74831
Usage/sleep	[illegible]	[illegible]	[illegible]	0.14	0.15	0.13	0.12	0.11	0.17	0.14	0.16	0.16	0.14
Costs/sleep	[illegible]	[illegible]	[illegible]	0.20	0.22	0.20	0.18	0.16	0.25	0.19	0.23	0.22	0.20
Occupied	[illegible]	[illegible]	[illegible]	3933	3989	4197	4527	4748	4274	4532	4442	4348	51146
Usage/occ	[illegible]	[illegible]	[illegible]	0.20	0.20	0.19	0.18	0.19	0.23	0.23	0.22	0.24	0.20
Costs/occ	[illegible]	[illegible]	[illegible]	0.30	0.30	0.28	0.27	0.27	0.33	0.32	0.32	0.34	0.30
2004	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
No of sleep	[illegible]	[illegible]	[illegible]	7036	9315	7314	7050	6885	7314	8036	7338	7493	86720
Usage/sleep	[illegible]	[illegible]	[illegible]	0.14	0.13	0.14	0.14	0.13	0.14	0.14	0.13	0.15	0.14
Costs/sleep	[illegible]	[illegible]	[illegible]	0.20	0.18	0.20	0.20	0.18	0.20	0.20	0.18	0.21	0.19
Occupied	[illegible]	[illegible]	[illegible]	4167	4690	6055	4876	4935	4262	4655	5357	4336	5620
Usage/occ	[illegible]	[illegible]	[illegible]	0.21	0.20	0.21	0.20	0.21	0.22	0.21	0.22	0.20	0.21
Costs/occ	[illegible]	[illegible]	[illegible]	0.33	0.37	0.24	0.29	0.26	0.34	0.34	0.25	0.37	0.31

Appendix 22: The result of the benchmarking water performance in the H2



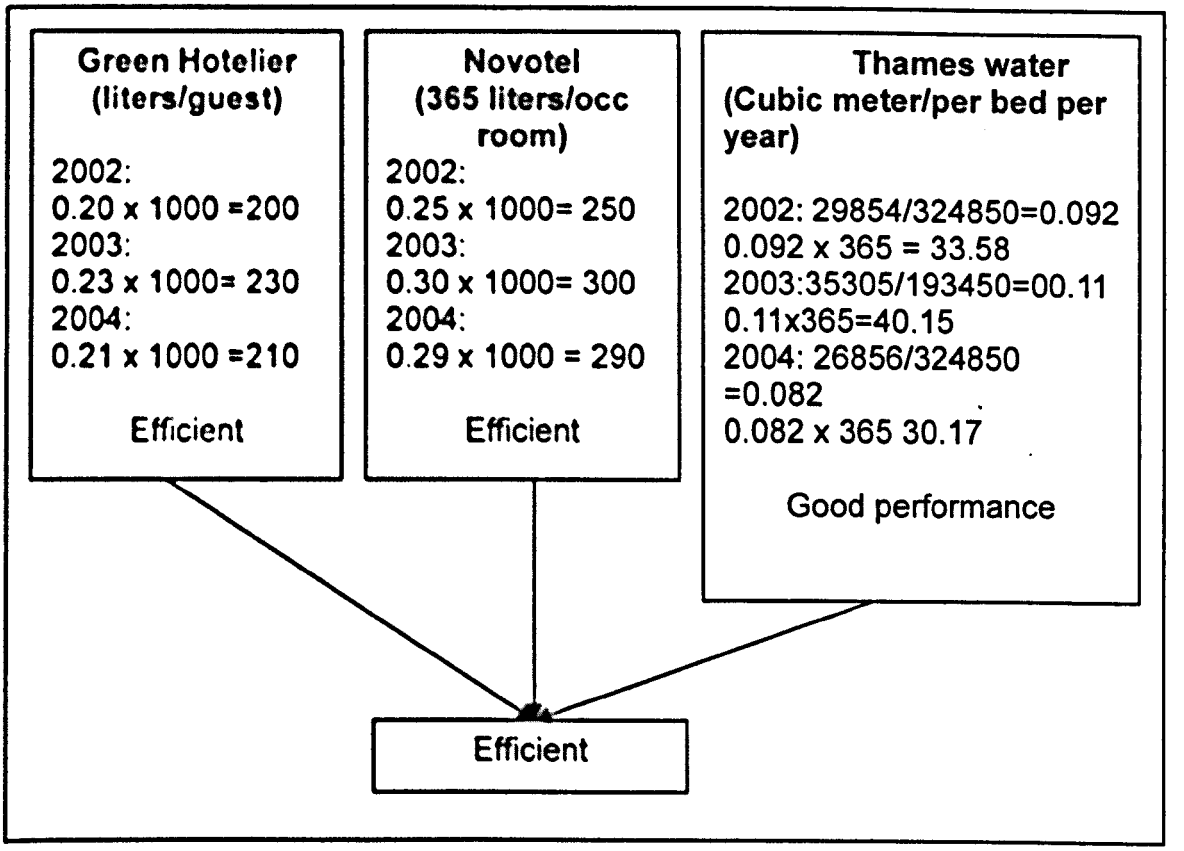
In order to find out whether H2 was efficient in their water use or not, the monthly sleeper nights (numbers of guests) and monthly occupied rooms figures were collected to compare it with the monthly water consumption and costs. Like H1, the water performance was measured by using three types of water benchmarks from Green Hotelier, Thames Water, and Novotel brand of the Accor group. After comparing it with Thames Water's benchmark, H2 was seen to be very efficient with their water used. After comparing it with the three water benchmarks, it was concluded that H2 was very efficient with water consumption.

Appendix 23: The results of the benchmarking of water performance in H3



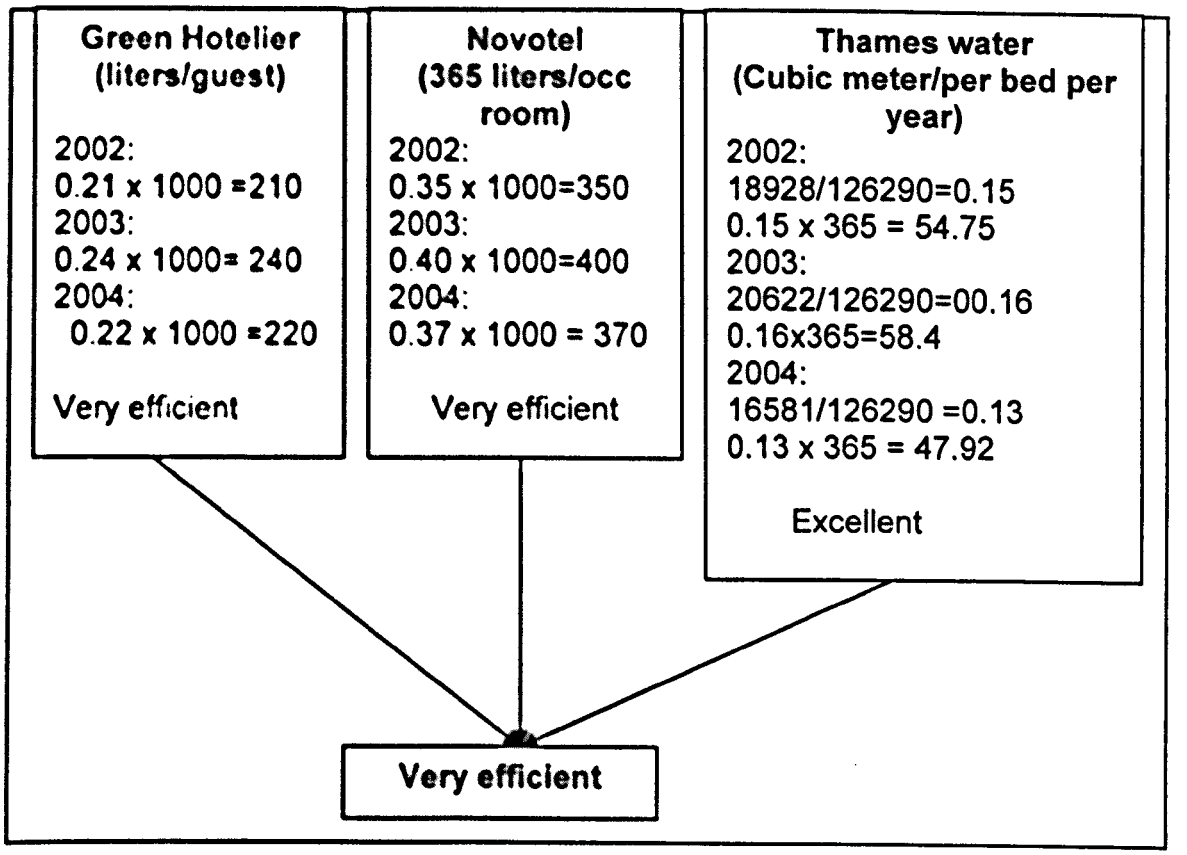
In order to find out whether H3 was efficient in their water use or not, the monthly sleeper nights and monthly occupied rooms figures were collected to compare it with the monthly water consumption and costs. Like H1 and H2, the water performance was measured by using three types of water benchmarks from Green Hotelier, Thames Water, and Novotel brand of the Accor group. After comparing it with Thames Water's benchmark, H3 was seen to be very efficient with their water used. After comparing it with the three water benchmarks, it was concluded that H3 was very efficient with water consumption.

Appendix 24: The results of benchmarking of water performance in H4



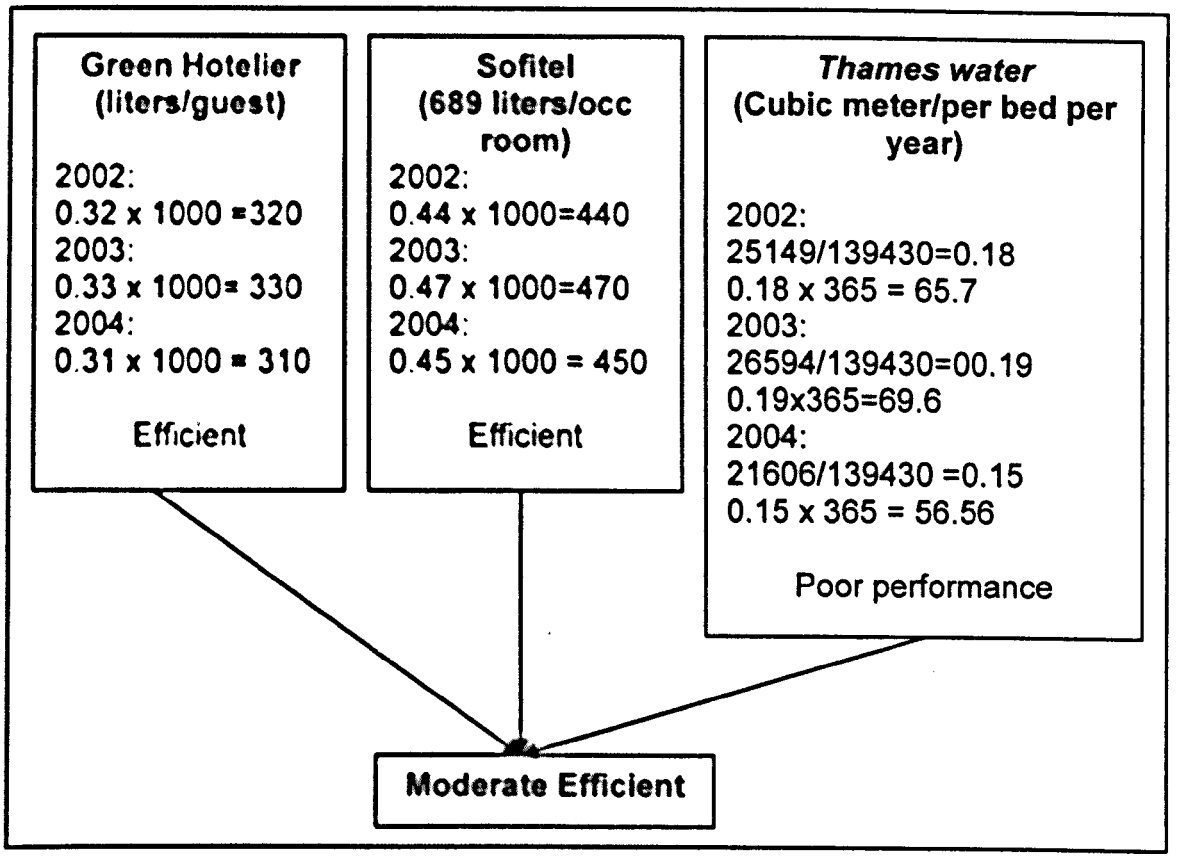
In order to find out whether H4 was efficient in their water use or not, the monthly sleeper nights and monthly occupied rooms figures were collected to compare it with the monthly water consumption and costs. Like H1, H2, and H3 the water performance was measured by using three types of water benchmarks from Green Hotelier, Thames Water, and Novotel brand of the Accor group. After comparing it with Thames Water's benchmark, H4 was seen to be very efficient with their water used. After comparing it with the three water benchmarks, it was concluded that H4 was relatively efficient with water consumption.

Appendix 25: The results of benchmarking water performance in H5



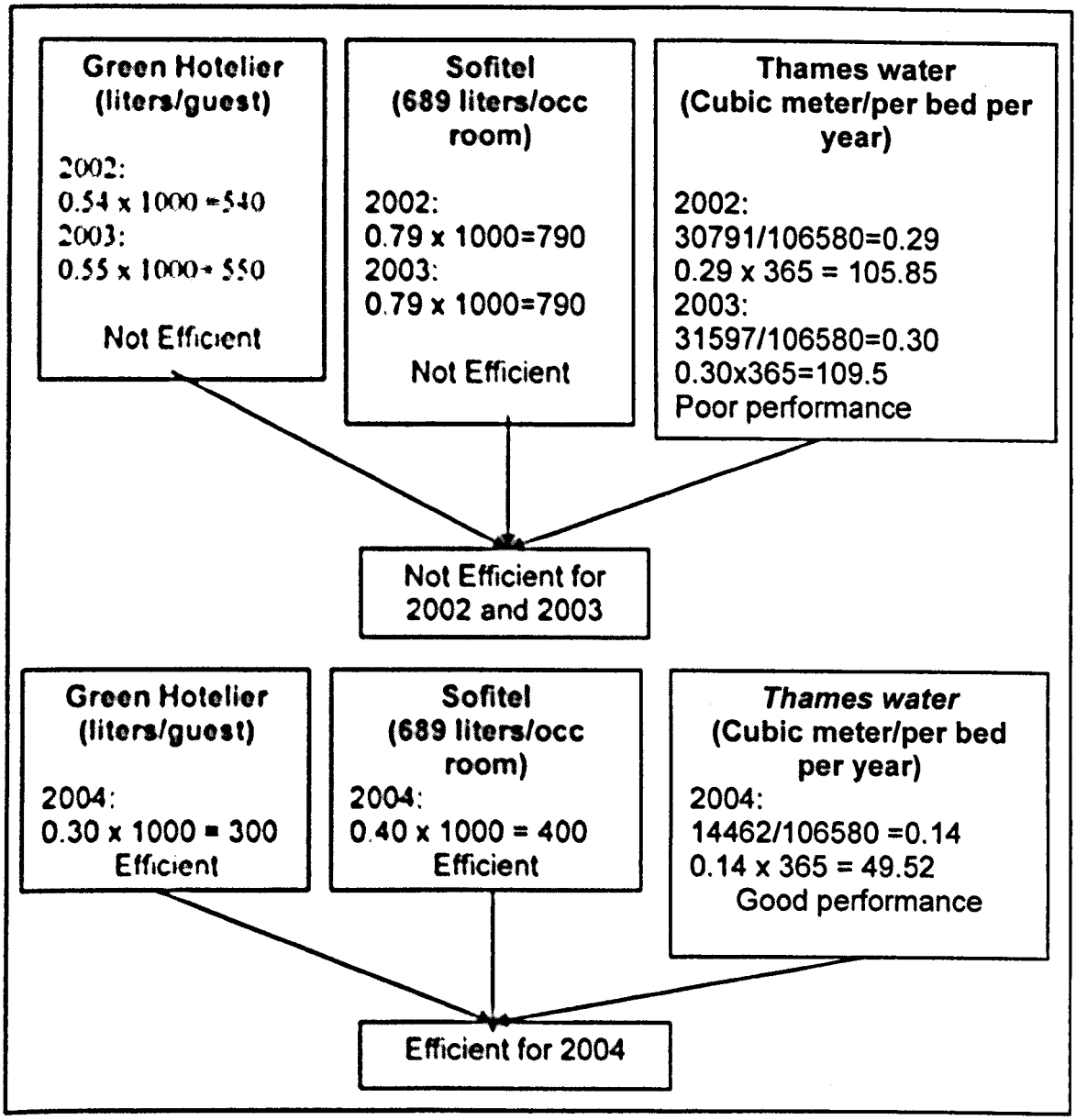
In order to find out whether H5 was efficient in their water use or not, the monthly sleeper nights and monthly occupied rooms figures were collected to compare it with the monthly water consumption and costs. Like H1, H2, H3, and H4 the water performance was measured by using three types of water benchmarks from Green Hotelier, Thames Water, and Novotel brand of the Accor group. After comparing it with Thames Water's benchmark, H5 was seen to be very efficient with their water used. After comparing it with the three water benchmarks, it was concluded that H5 was very efficient with water consumption.

Appendix 26: The results of the benchmarking of water performance in H6



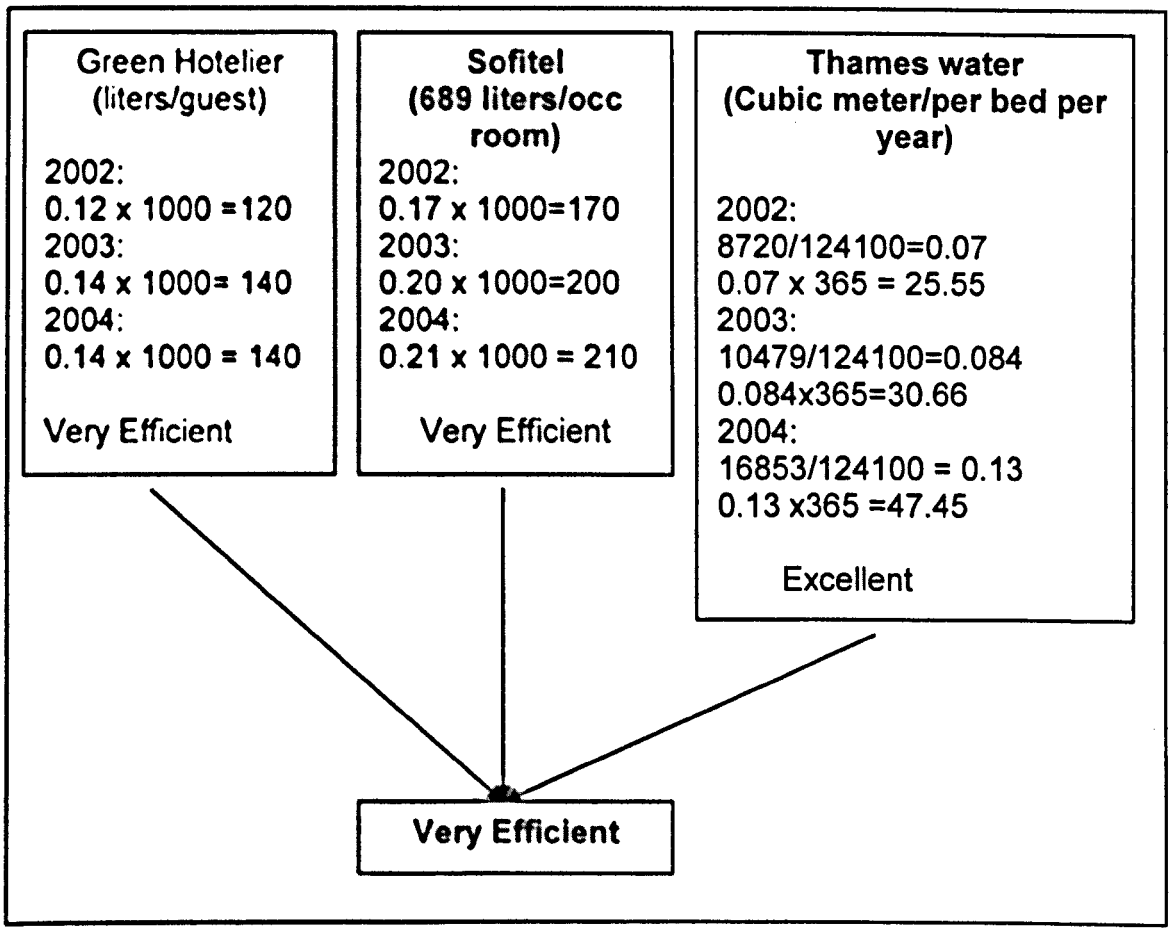
In order to find out whether H6 was efficient in their water use or not, the monthly sleeper nights and monthly occupied rooms figures were collected to compare it with the monthly water consumption and costs. Like H1, H2, H3, H4, and H5 the water performance was measured by using three types of water benchmarks from Green Hotelier, Thames Water, and Novotel brand of the Accor group. After comparing it with Thames Water's benchmark, H6 was seen to be moderate efficient with their water used. After comparing it with the three water benchmarks, it was concluded that H6 was moderate efficient with water consumption.

Appendix 27: the results of the benchmarking of water performance in H7



Unlike H1, H2, H3, H4, H5, and H6, Appendix 6.6 illustrated the calculations and the results shows that H7 was not efficient with water used in 2002 and 2003, but was becoming efficient in 2004.

Appendix 28: The results of the benchmarking of water performance in H8



According to the results of comparing figures with the three water benchmarks, it is concluded that H8 was very efficient with their water used.

Appendix 29: water prices variance and water usage variance for H1

The analysis of water cost variance from the year 2002

Actual total water usage in 2002	Actual water price per sleeper night in 2002		
21315	X 0.24	=5116	
			Water price variance £-1705 (F)
Total water usage in 2002	Standard water price per sleeper night		
21315	X 0.32	= 6821	
Standard water usage (total sleeper nights in 2002 x Green Hotelier)	Standard water price		Water usage variance £-7797 (F)
103820 X 0.44	X 0.32	= 14618	
Total cost variance			£-9502 (F)

The analysis of water cost variance from the year 2003

Actual total water usage in 2003	Actual water price per sleeper night in 2003		
21397	X 0.26	=5563	
			Water price variance £-1284 (F)
Total water usage in 2003	Standard water price per sleeper night		
21397	X 0.32	= 6847	
Standard water usage (total sleeper nights x Green Hotelier)	Standard water price		Water usage variance £-6666 (F)
95974 X 0.44	X 0.32	= 13513	
Total cost variance			£-7950 (F)

The analysis of water cost variance from the year 2004

Actual total water usage in 2004 19920	Actual water price per sleeper night in 2004 X 0.23	=4582	
			Water price variance £-1792 (F)
Total water usage in 2004 19920	Standard water price per sleeper night X 0.32	= 6374	
Standard water usage (total sleeper nights in 2004 x Green Hotelier) 95376 X 0.44	Standard water price X 0.32	= 13429	Water usage variance £-7055 (F)
Total cost variance			£-8847 (F)

Appendix 30: water prices variance and water usage variance for H2

The analysis of water cost variance from the year 2002

Actual total water usage in 2002	Actual water price per sleeper night in 2002		
13657	X 0.21	=2868	Water price variance £-1792 (F)
Total water usage in 2002	Standard water price per sleeper night		
13657	X 0.32	= 4370	
Standard water usage (total sleeper nights in 2002 x Green Hotelier)	Standard water price		Water usage variance £-10248 (F)
65155 X 0.44	X 0.32	= 14618	
Total cost variance			£-11750 (F)

The analysis of water cost variance from the year 2003

Actual total water usage in 2003	Actual water price per sleeper night in 2003		
15464	X 0.23	=3557	Water price variance £-1392 (F)
Total water usage in 2003	Standard water price per sleeper night		
15464	X 0.32	= 4949	
Standard water usage (total sleeper nights x Green Hotelier)	Standard water price		Water usage variance £-6338 (F)
80159 X 0.44	X 0.32	= 11287	
Total cost variance			£-7730 (F)

The analysis of water cost variance from the year 2004

Actual total water usage in 2004 14076	Actual water price per sleeper night in 2004 X 0.23	=3237	Water price variance £-1267 (F)
Total water usage in 2004 14076	Standard water price per sleeper night X 0.32	= 4504	
Standard water usage (total sleeper nights in 2004 x Green Hotelier) 61454 X 0.44	Standard water price X 0.32	= 8652	Water usage variance £-4148 (F)
Total cost variance			£-5415 (F)

Appendix 31: water prices variance and water usage variance for H3

The analysis of water cost variance from the year 2002

Actual total water usage in 2002 14766	Actual water price per sleeper night in 2002 X 0.22	=3249	
			Water price variance £-1476 (F)
Total water usage in 2002 14766	Standard water price per sleeper night X 0.32	= 4725	
			Water usage variance £-7621(F)
Standard water usage (total sleeper nights in 2002 x Green Hotelier) 87682 X 0.44	Standard water price X 0.32	= 12346	
Total cost variance			£-9097 (F)

The analysis of water cost variance from the year 2003

Actual total water usage in 2003 16235	Actual water price per sleeper night in 2003 X 0.25	=4059	
			Water price variance £-1136 (F)
Total water usage in 2003 16235	Standard water price per sleeper night X 0.32	= 5195	
			Water usage variance £-7829 (F)
Standard water usage (total sleeper nights x Green Hotelier) 92499 X 0.44	Standard water price X 0.32	= 13024	
Total cost variance			£-8965 (F)

The analysis of water cost variance from the year 2004

Actual total water usage in 2004	Actual water price per sleeper night in 2004		
14962	X 0.25	=3741	Water price variance £-1047 (F)
Total water usage in 2004	Standard water price per sleeper night		
14962	X 0.32	= 4788	
Standard water usage (total sleeper nights in 2004 x Green Hotelier)	Standard water price		Water usage variance £-6292 (F)
78747 X 0.44	X 0.32	= 11080	
Total cost variance			£-7399 (F)

Appendix 32: water prices variance and water usage variance for H4

The analysis of water cost variance from the year 2002

Actual total water usage in 2002	Actual water price per sleeper night in 2002		
29854	X 0.27	=8060	
			Water price variance £-1493 (F)
Total water usage in 2002	Standard water price per sleeper night		
29854	X 0.32	= 9553	
Standard water usage (total sleeper nights in 2002 x Green Hotelier)	Standard water price		Water usage variance £-11087 (F)
146595 X 0.44	X 0.32	= 20640	
Total cost variance			£-12580 (F)

The analysis of water cost variance from the year 2003

Actual total water usage in 2003	Actual water price per sleeper night in 2003		
35305	X 0.30	=10592	
			Water price variance £-706 (F)
Total water usage in 2003	Standard water price per sleeper night		
35305	X 0.32	=11298	
Standard water usage (total sleeper nights in 2003 x Green Hotelier)	Standard water price		Water usage variance £-10761 (F)
156667 X 0.44	X 0.32	= 22059	
Total cost variance			£-11467 (F)

The analysis of water cost variance from the year 2004

Actual total water usage in 2004	Actual water price per sleeper night in 2004		
26586	X 0.27	=7251	Water price variance £-1343 (F)
Total water usage in 2004	Standard water price per sleeper night		
26586	X 0.32	= 8594	
Standard water usage (total sleeper nights in 2004 x Green Hotelier)	Standard water price		Water usage variance £-9231 (F)
126600 X 0.44	X 0.32	= 126600	
Total cost variance			£-10574 (F)

Appendix 33: water prices variance and water usage variance for H5

The analysis of water cost variance from the year 2002

Actual total water usage in 2002	Actual water price per sleeper night in 2002		
18928	X 0.22	=4164	
			Water price variance £-18993 (F)
Total water usage in 2002	Standard water price per sleeper night		
18928	X 0.32	= 6057	
Standard water usage (total sleeper nights in 2002 x Green Hotelier)	Standard water price		Water usage variance £-6908 (F)
92079 X 0.44	X 0.32	= 12965	
Total cost variance			£-8801 (F)

The analysis of water cost variance from the year 2003

Actual total water usage in 2003	Actual water price per sleeper night in 2003		
20622	X 0.25	=5155	
			Water price variance £-1444 (F)
Total water usage in 2003	Standard water price per sleeper night		
20622	X 0.32	= 6599	
Standard water usage (total sleeper nights x Green Hotelier)	Standard water price		Water usage variance £-5627 (F)
86833 X 0.44	X 0.32	= 12226	
Total cost variance			£-7071 (F)

The analysis of water cost variance from the year 2004

Actual total water usage in 2004	Actual water price per sleeper night in 2004		
16581	X 0.24	=3980	
			Water price variance £-1326 (F)
Total water usage in 2004	Standard water price per sleeper night		
16581	X 0.32	= 5306	
Standard water usage (total sleeper nights in 2004 x Green Hotelier)	Standard water price		Water usage variance £-5082 (F)
73775 X 0.44	X 0.32	= 10388	
Total cost variance			£-6408 (F)

Appendix 34: water prices variance and water usage variance for H6

The analysis of water cost variance from the year 2002

Actual total water usage in 2002	Actual water price per sleeper night in 2002		
25149	X 0.53	=13329	
			Water price variance £ 5281 (UF)
Total water usage in 2002	Standard water price per sleeper night		
25149	X 0.32	= 8048	
Standard water usage (total sleeper nights in 2002 x Green Hotelier)	Standard water price		Water usage variance £-2867 (F)
77518 X 0.44	X 0.32	= 10915	
Total cost variance			£2414 (UF)

The analysis of water cost variance from the year 2003

Actual total water usage in 2003	Actual water price per sleeper night in 2003		
26594	X 0.58	=15424	
			Water price variance £6914 (UF)
Total water usage in 2003	Standard water price per sleeper night		
26594	X 0.32	= 8510	
Standard water usage (total sleeper nights x Green Hotelier)	Standard water price		Water usage variance £-2754 (F)
80000 X 0.44	X 0.32	= 11264	
Total cost variance			£4160 (F)

The analysis of water cost variance from the year 2004

Actual total water usage in 2004 21606	Actual water price per sleeper night in 2004 X 0.51	=11019	Water price variance £4105 (UF)
Total water usage in 2004 21606	Standard water price per sleeper night X 0.32	= 6914	
Standard water usage (total sleeper nights in 2004 x Green Hotelier) 68955 X 0.44	Standard water price X 0.32	= 9709	Water usage variance £-2795 (F)
Total cost variance			£1310 (UF)

Appendix 35: water prices variance and water usage variance for H7

The analysis of water cost variance from the year 2002

Actual total water usage in 2002 30791	Actual water price per sleeper night in 2002 X 0.55	=17034	
			Water price variance £7181 (UF)
Total water usage in 2002 30791	Standard water price per sleeper night X 0.32	= 9853	
			Water usage variance £1839 (UF)
Standard water usage (total sleeper nights in 2002 x Green Hotelier) 56917 X 0.44	Standard water price X 0.32	= 8014	
Total cost variance			£9020 (UF)

The analysis of water cost variance from the year 2003

Actual total water usage in 2003 31597	Actual water price per sleeper night in 2003 X 0.59	=18642	
			Water price variance £8531 (UF)
Total water usage in 2003 31597	Standard water price per sleeper night X 0.32	= 10111	
			Water usage variance £1997 (UF)
Standard water usage (total sleeper nights x Green Hotelier) 57628 X 0.44	Standard water price X 0.32	= 8114	
Total cost variance			£10528 (UF)

The analysis of water cost variance from the year 2004

Actual total water usage in 2004	Actual water price per sleeper night in 2004		
14462	X 0.30	=4339	Water price variance £-289 (F)
Total water usage in 2004	Standard water price per sleeper night		
14462	X 0.32	= 4628	
Standard water usage (total sleeper nights in 2004 x Green Hotelier)	Standard water price		Water usage variance £-2214 (F)
48591 X 0.44	X 0.32	= 6842	
Total cost variance			£-2503 (F)

Appendix 36: water prices variance and water usage variance for H8

The analysis of water cost variance from the year 2002

Actual total water usage in 2002 8720	Actual water price per sleeper night in 2002 X 0.19	=1657	Water price variance £-1134 (F)
Total water usage in 2002 8720	Standard water price per sleeper night X 0.32	= 2791	
Standard water usage (total sleeper nights in 2002 x Green Hotelier) 75296 X 0.44	Standard water price X 0.32	= 10602	Water usage variance £-7811 (F)
Total cost variance			£-8945 (F)

The analysis of water cost variance from the year 2003

Actual total water usage in 2003 10479	Actual water price per sleeper night in 2003 X 0.20	=2096	Water price variance £-1257 (F)
Total water usage in 2002 10479	Standard water price per sleeper night X 0.32	= 3353	
Standard water usage (total sleeper nights x Green Hotelier) 74831 X 0.44	Standard water price X 0.32	= 10536	Water usage variance £-7183 (F)
Total cost variance			£-8440 (F)

The analysis of water cost variance from the year 2004

Actual total water usage in 2004 11924	Actual water price per sleeper night in 2004 X 0.19	=2266	
			Water price variance £-1550 (F)
Total water usage in 2004 11924	Standard water price per sleeper night X 0.32	= 3816	
Standard water usage (total sleeper nights in 2004 x Green Hotelier) 86720 X 0.44	Standard water price X 0.32	= 12211	Water usage variance £-8395 (F)
Total cost variance			£-9945 (F)